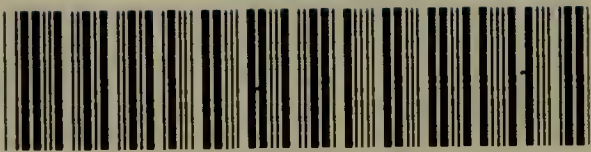
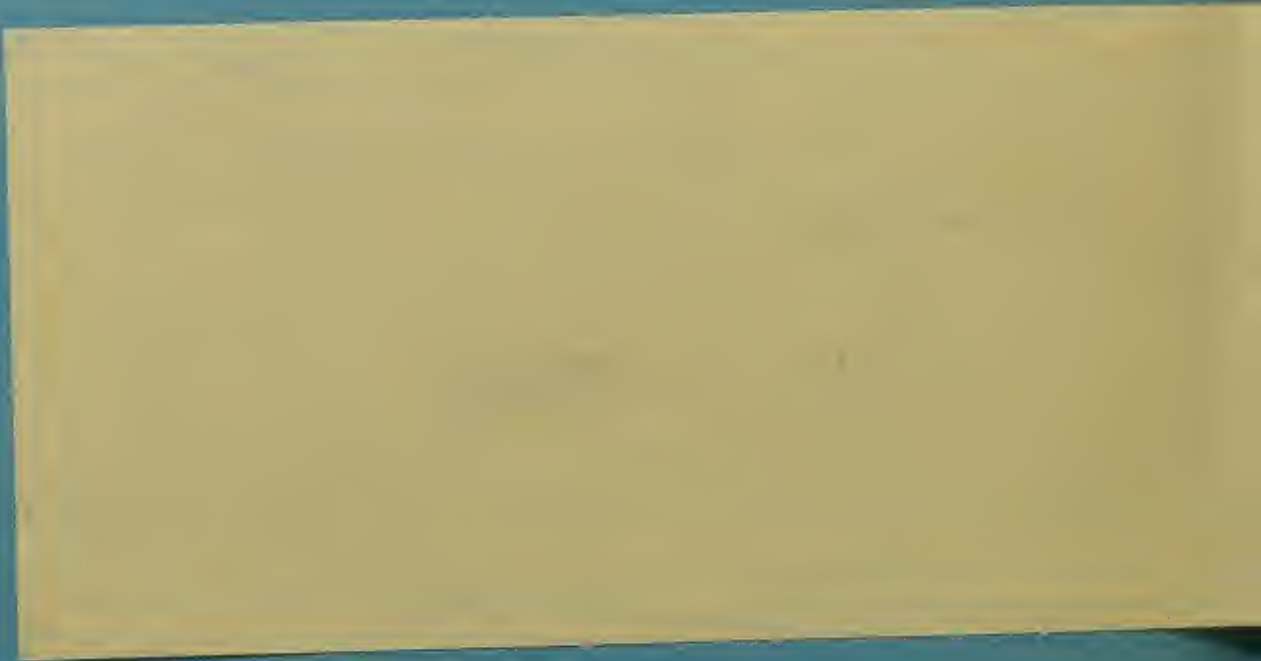


REPORT
OF THE
COMMISSION TO INVESTIGATE MEASURES
FOR THE
RELIEF OF CONSUMPTIVES.

JANUARY, 1907.



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Commonwealth of Massachusetts.

Chapter 102, Resolves of 1906.

RESOLVE TO PROVIDE FOR THE APPOINTMENT OF A COMMISSION TO INVESTIGATE MEASURES FOR THE RELIEF OF CONSUMPTIVES, AND SITES FOR STATE HOSPITALS FOR CONSUMPTIVES.

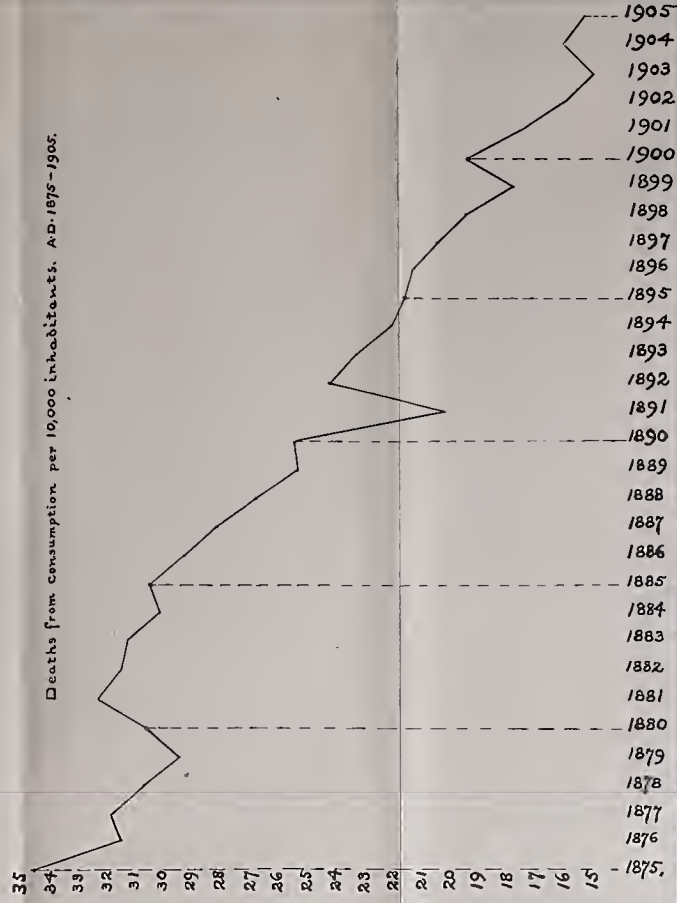
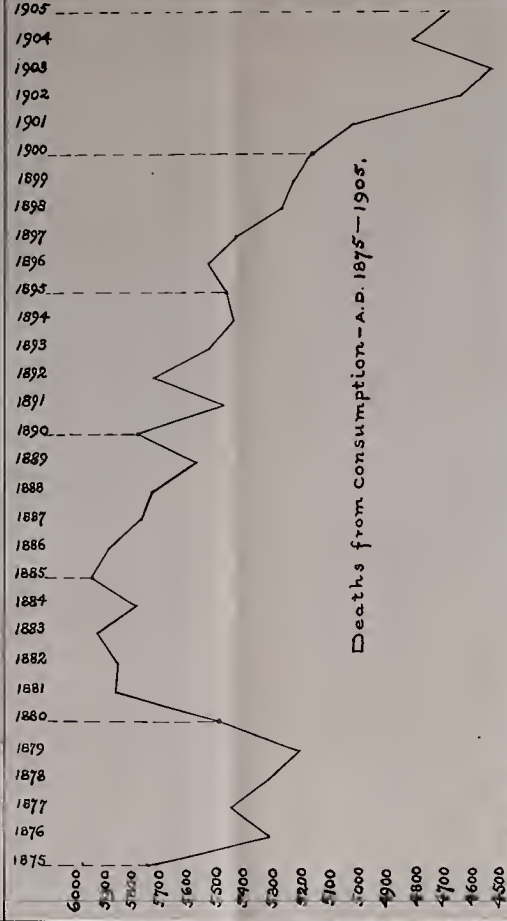
Resolved, That the governor designate two members of the state board of charity, two members of the state board of health, and one other person, to serve as a commission to investigate and report to the general court on or before the second Wednesday of January next, as to the number of persons in the Commonwealth who are suffering from pulmonary tuberculosis, or consumption, in an advanced stage ; as to appropriate and available sites for a hospital or hospitals for the treatment of such sufferers ; as to the probable cost to the Commonwealth of erecting and maintaining hospitals adequate for such treatment ; and as to the advisability of the undertaking by the Commonwealth of the care and treatment of such sufferers. The members of said commission shall serve without pay, but all travelling and other necessary expenses incurred by them in the performance of their official duties shall be paid by the Commonwealth. They may employ a secretary and determine his compensation, and may expend a sum not exceeding five thousand dollars in carrying out the purpose of this resolve, including the printing of their report. *Approved June 20, 1906.*

COMMISSION TO INVESTIGATE MEASURES FOR THE
RELIEF OF CONSUMPTIVES.

HENRY P. WALCOTT, M.D., <i>Chairman</i> ,	.	.	CAMBRIDGE.
CHARLES H. ADAMS,	.	.	MELROSE.
JEFFREY R. BRACKETT,	.	.	BOSTON.
CHARLES H. PORTER,	.	.	QUINCY.
ADAM S. MAC KNIGHT, M.D.,	.	.	FALL RIVER.

CHARLES S. MILLET, M.D., <i>Secretary</i> ,	.	.	BROCKTON.
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CHART Showing decrease of consumption in Massachusetts.



REPORT.

STATE HOUSE, BOSTON, MASS., January, 1907.

To the Honorable Senate and House of Representatives in General Court assembled

In accordance with a resolve passed by the Legislature of 1906, the Governor appointed Charles H. Adams of Melrose, Jeffrey R. Brackett of Boston, Henry P. Walcott, M.D., of Cambridge, Charles H. Porter of Quincy and Adam S. Mac Knight, M.D., of Fall River, to act as members of a Commission to investigate Measures for the Relief of Consumptives, and Sites for State Hospitals for Consumptives.

This commission organized soon after appointment, choosing Henry P. Walcott, M.D., as chairman, and immediately entered upon the duties imposed upon it. The report of the commission is herein respectfully submitted.

1. AS TO THE NUMBER OF PERSONS IN THE COMMONWEALTH WHO ARE SUFFERING FROM PULMONARY TUBERCULOSIS, OR CONSUMPTION, IN AN ADVANCED STAGE.

After carefully considering several different ways of making this enumeration, the commission decided to send a circular letter to every physician in the State, asking how many persons suffering with this disease he had under observation. Inclosed with the circular were a filing card and stamped envelope, so that the physicians might be able to report with but little trouble. The circular read as follows:—

COMMISSION UPON CONSUMPTION,
STATE HOUSE, BOSTON, Nov. 3, 1906.

CHAPTER 102.

RESOLVE TO PROVIDE FOR THE APPOINTMENT OF A COMMISSION TO INVESTIGATE MEASURES FOR THE RELIEF OF CONSUMPTIVES, AND SITES FOR STATE HOSPITALS FOR CONSUMPTIVES.

Resolved, that the governor designate two members of the state board of charity, two members of the state board of health, and one

other person, to serve as a commission to investigate and report to the general court on or before the second Wednesday of January next, as to the number of persons in the Commonwealth who are suffering from pulmonary tuberculosis, or consumption, in an advanced stage; as to appropriate and available sites for a hospital or hospitals for the care and treatment of such sufferers; as to the probable cost to the Commonwealth of erecting and maintaining hospitals adequate for such treatment; and as to the advisability of the undertaking by the Commonwealth of the care and treatment of such sufferers.

Approved June 20, 1906.

DEAR SIR :— In order to obtain the desired information, as provided by the above resolution, it is necessary to ask the co-operation of the physicians in the State ; and, although this resolve only carries instructions to obtain the number of persons in the Commonwealth who are suffering from pulmonary tuberculosis in an advanced stage, yet it seems wise to the commission respectfully to request an answer to all of the enclosed questions, so that it may be possible to present the facts to the next Legislature in such a manner that it may arrive at some definite conclusion upon a subject that has caused a great deal of discussion in the legislative bodies during the past ten years.

In behalf of the commission, may we ask a careful consideration of these questions, and beg an early reply ?

Very respectfully yours,

HENRY P. WALCOTT,
Chairman.

CHARLES S. MILLET,
Secretary to the Commission.

On one side of the filing card the following words were printed :—

Report of Dr.....from the Town of.....

Please state how many cases of consumption are now under your care :—

1. How many in the incipient stage?.....
2. How many in the advanced stage?.....
3. How many far advanced?.....

Dated..... Signed.....

[OVER]

And upon the reverse side was placed a definition of the various forms of the disease, which read thus:—

The commission would suggest the following classification:—

- | | |
|----------------------------|--|
| (1) INCIPIENT — to mean | { Patient feels able to work; small area involved; few, if any, bacilli in sputum; slight cough; little or no rise of temperature. PATIENT SLIGHTLY ILL. |
| (2) ADVANCED — to mean | { Patient not fully able to work; large area involved; numerous bacilli in sputum; temperature 101° or over; much cough and expectoration. PATIENT SERIOUSLY ILL. |
| (3) FAR ADVANCED — to mean | { Patient unable to work; disease extensive; many bacilli in sputum; high temperature; occasional chills; night sweats; distressing cough; abundant expectoration; sometimes vomiting and diarrhoea. PATIENT HOPELESSLY ILL. |

Later, not having obtained as complete information as was desired by this method, the commission voted to send a reliable person to each physician in two of the counties in the State, to explain the object in asking these questions, and to obtain, if possible, an answer to them. It was thought best to select counties located in widely different parts of the Commonwealth, possessing somewhat dissimilar climatic conditions, and differing to a certain extent from an industrial point of view. Consequently, Bristol and Berkshire counties were chosen, with the idea that from the number of cases found in these two districts a ratio could be established,¹ if necessary, by means of which a fair estimate of all the cases of consumption in the State could be made.

The following tables give the number of persons suffering with pulmonary tuberculosis in Massachusetts, so far as was reported by the physicians:—

¹ Finally, so many physicians answered that it was deemed unnecessary to make this estimate.

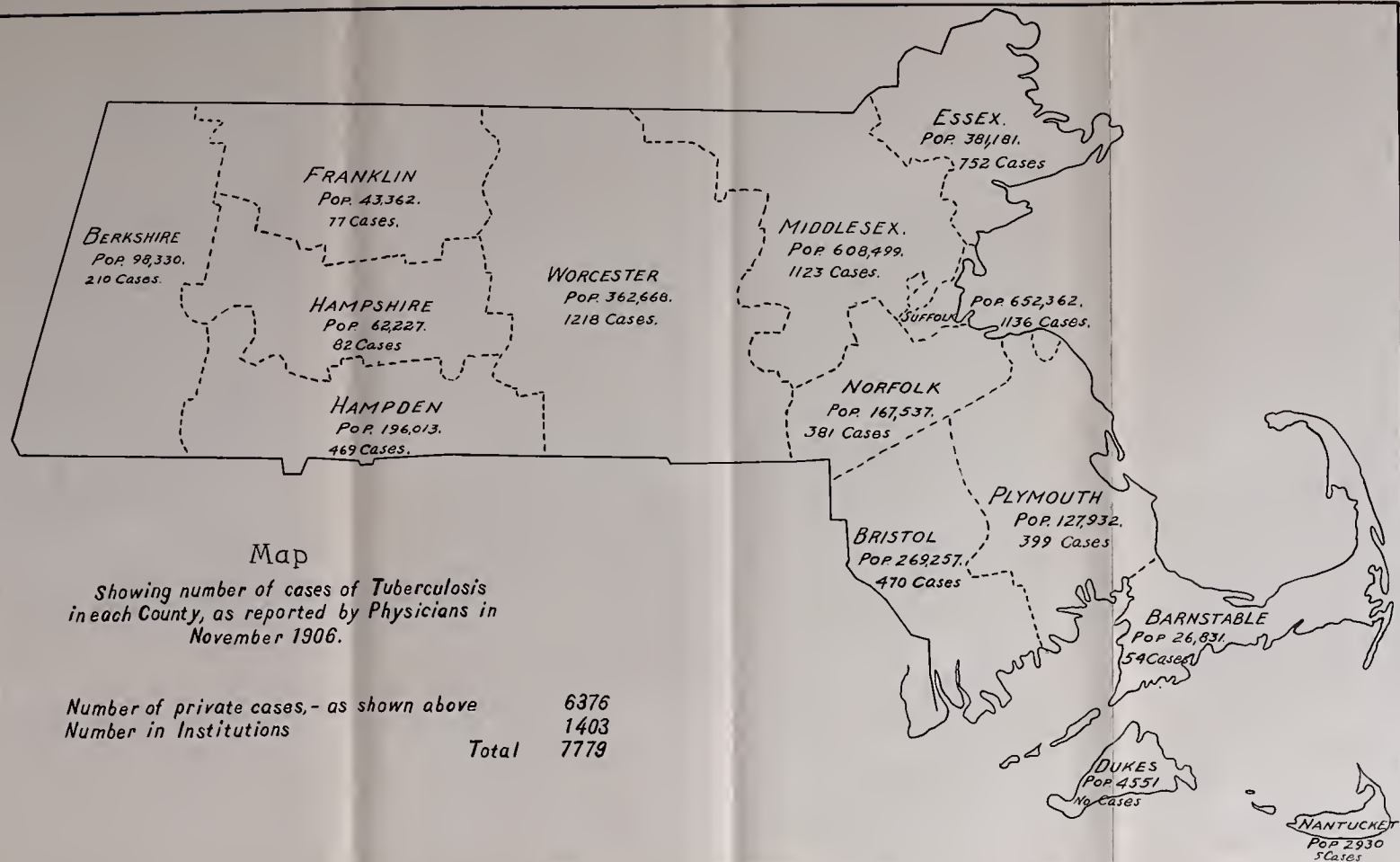
NUMBER OF CASES OF PULMONARY TUBERCULOSIS REPORTED BY
PHYSICIANS, TOGETHER WITH THOSE IN PUBLIC AND PRIVATE
INSTITUTIONS.

Summary of the State, by Counties.

	Popula- tion.	Incipient.	Advanced.	Far Advanced.	Totals.
<i>Counties.</i>					
1. Barnstable, . . .	26,831	28	14	12	54
2. Berkshire, . . .	98,330	98	68	44	210
3. Bristol, . . .	269,257	201	178	91	470
4. Dukes, . . .	4,551	—	—	—	—
5. Essex, . . .	381,181	350	264	138	752
6. Franklin, . . .	43,362	32	26	19	77
7. Hampden, . . .	196,013	245	147	77	469
8. Hampshire, . . .	62,227	40	28	14	82
9. Middlesex, . . .	608,499	550	355	218	1,123
10. Nantucket, . . .	2,930	1	2	2	5
11. Norfolk, . . .	167,537	208	106	67	381
12. Plymouth, . . .	127,932	154	177	68	399
13. Suffolk, . . .	652,362	31	13	1,092	1,136
14. Worcester, . . .	362,668	560	428	230	1,218
Totals, . . .	—	2,498	1,806	2,072	6,376
<i>Institutions.</i>					
Rutland Sanatorium, .	—	87	153	98	338
State prisons, . . .	—	34	127	81	242
Jails and houses of correc- tion.	—	16	21	6	43
State Hospital at Tewks- bury, . . .	—	22	104	71	197
Other State institutions, .	—	86	42	17	145
Almshouses, . . .	—	—	—	179	179
Private sanatoria, . . .	—	23	64	39	126
Charitable corporations, .	—	26	22	85	133
Totals, . . .	—	294	533	576	1,403

The number of incipient cases reported from the whole State is 2,792, the number of advanced and far advanced is 4,987, the total number of all forms of the disease is 7,779.

The number of incipient cases reported from the whole State, outside of the prisons, State institutions, sanatoria, almshouses, and charitable corporations is 2,498, the number of advanced and far advanced is 3,878, the total number of all forms of the disease is 6,376; 3,137 physicians were asked to report by mail, 675 failed to reply.



Barnstable County.

TOWNS.	Popula- tion.	Incipient.	Advanced.	Far Advanced.	Totals.
1. Barnstable, . . .	4,336	16	5	6	27
2. Bourne, . . .	1,786	—	1	1	2
3. Brewster, . . .	739	—	—	—	—
4. Chatham, . . .	1,634	1	1	1	3
5. Dennis, . . .	1,998	1	3	3	7
6. Eastham, . . .	519	—	—	—	—
7. Falmouth, . . .	3,241	—	—	—	—
8. Harwich, . . .	2,291	2	1	—	3
9. Mashpee, . . .	317	2	1	—	3
10. Orleans, . . .	1,052	—	—	—	—
11. Provincetown, . . .	4,362	3	—	—	3
12. Sandwich, . . .	1,433	—	1	—	1
13. Truro, . . .	743	—	—	—	—
14. Wellfleet, . . .	958	3	1	1	5
15. Yarmouth, . . .	1,422	—	—	—	—
Totals, . . .	—	28	14	12	54

The number of incipient cases reported from Barnstable County is 28, the number of advanced and far advanced is 26, the total number of all forms of the disease is 54; 43 physicians were asked to report by mail, 5 failed to reply.

Berkshire County.

CITIES AND TOWNS.	Popula- tion.	Incipient.	Advanced.	Far Advanced.	Totals.
1. Adams, . . .	12,486	9	7	4	20
2. Alford, . . .	275	—	—	—	—
3. Becket, . . .	890	—	2	—	2
4. Cheshire, . . .	1,281	—	—	—	—
5. Clarksburg, . . .	1,200	—	—	—	—
6. Dalton, . . .	3,122	2	1	1	4
7. Egremont, . . .	721	—	—	—	—
8. Florida, . . .	424	—	—	—	—
9. Great Barrington, . . .	6,152	10	4	2	16
10. Hancock, . . .	434	—	—	—	—
11. Hinsdale, . . .	1,452	2	2	2	6

Berkshire County—Concluded.

CITIES AND TOWNS.	Popula- tion.	Incipient.	Advanced.	Far Advanced.	Totals.
12. Lanesborough, . . .	845	—	—	—	—
13. Lec, ...	3,972	3	—	1	4
14. Lenox, ...	3,058	—	—	—	—
15. Monterey, ...	444	—	2	—	2
16. Mount Washington, .	87	—	—	—	—
17. New Ashford, . . .	100	—	—	—	—
18. New Marlborough, . .	1,209	1	—	1	2
19. North Adams, . . .	22,150	23	18	9	50
20. Otis, ...	534	1	1	—	2
21. Peru, ...	268	—	—	—	—
22. Pittsfield, ...	25,001	33	21	18	72
23. Richmond, ...	601	—	—	—	—
24. Sandisfield, ...	657	—	—	—	—
25. Savoy, ...	549	—	—	—	—
26. Sheffield, ...	1,728	2	3	1	6
27. Stockbridge, ...	2,022	7	2	1	10
28. Tyringham, ...	314	—	—	—	—
29. Washington, ...	339	—	—	—	—
30. West Stockbridge, . .	1,023	1	—	—	1
31. Williamstown, ...	4,425	4	5	4	13
32. Windsor, ...	513	—	—	—	—
Totals, ...	—	98	68	44	210

The number of incipient cases reported from Berkshire County is 98, the number of advanced and far advanced is 112, the total number of all forms of the disease is 210; 124 physicians were called upon, 9 failed to report.

In this county the physicians were also asked in regard to the need of hospitals for advanced cases; 46 persons were said to need hospital treatment, and 42 to desire it.

Bristol County.

CITIES AND TOWNS.	Popula- tion.	Incipient.	Advanced.	Far Advanced.	Totals.
1. Acushnet, . . .	1,284	—	—	—	—
2. Attleborough, . . .	12,702	7	7	3	17
3. Berkley, . . .	931	—	—	—	—
4. Dartmouth, . . .	3,793	—	—	—	—
5. Dighton, . . .	2,070	1	—	—	1
6. Easton, . . .	4,909	10	4	1	15
7. Fairhaven, . . .	4,235	3	2	1	6
8. Fall River, . . .	105,762	43	47	25	115
9. Freetown, . . .	1,470	—	—	1	1
10. Mansfield, . . .	4,245	4	4	4	12
11. New Bedford, . . .	74,362	74	70	34	178
12. North Attleborough, . . .	7,878	14	2	1	17
13. Norton, . . .	2,079	2	—	—	2
14. Raynham, . . .	1,662	—	—	—	—
15. Rehoboth, . . .	1,991	—	—	—	—
16. Seekonk, . . .	1,917	—	—	—	—
17. Somerset, . . .	2,294	—	2	—	2
18. Swansea, . . .	1,839	—	1	—	1
19. Taunton, . . .	30,967	37	37	17	91
20. Westport, . . .	2,867	6	2	4	12
Totals, . . .	—	201	178	91	470

The number of incipient cases reported from Bristol County is 201, the number of advanced and far advanced is 269, the total number of all forms of the disease is 470; 288 physicians were called upon, 12 were away on vacations and 20 who promised to send their reports later by mail neglected to do so.

In this county the physicians were also asked in regard to the need of hospitals for advanced cases; 123 persons were said to need hospital treatment, and 83 to desire it.

Dukes County.

TOWNS.	Popula- tion.	Incipient.	Advanced.	Far Advanced.	Totals.
1. Chilmark, . . .	322	—	—	—	—
2. Cottage City, . . .	1,138	—	—	—	—
3. Edgartown, . . .	1,175	—	—	—	—
4. Gay Head, . . .	178	—	—	—	—
5. Gosnold, . . .	161	—	—	—	—
6. Tisbury, . . .	1,120	—	—	—	—
7. West Tisbury, . . .	457	—	—	—	—
Totals, . . .	—	—	—	—	—

The number of incipient cases reported from Dukes County is none, the number of advanced and far advanced is none, the total number of all forms of the disease is none; 8 physicians were asked to report by mail, 1 failed to reply.

Essex County.

CITIES AND TOWNS.	Popula- tion.	Incipient.	Advanced.	Far Advanced.	Totals.
1 Amesbury, . . .	8,840	21	8	4	33
2. Andover, . . .	6,632	5	6	4	15
3. Beverly, . . .	15,223	4	4	2	10
4. Boxford, . . .	665	—	—	—	—
5. Danvers, . . .	9,063	15	9	7	31
6. Essex, . . .	1,790	—	2	—	2
7. Georgetown, . . .	1,840	—	1	—	1
8. Gloucester, . . .	26,011	17	8	4	29
9. Groveland, . . .	2,401	1	—	—	1
10. Hamilton, . . .	1,646	1	1	1	3
11. Haverhill, . . .	37,830	43	33	23	99
12. Ipswich, . . .	5,205	1	5	—	6
13. Lawrence, . . .	70,050	76	59	35	170
14. Lynn, . . .	77,042	65	57	23	145
15. Lynnfield, . . .	797	—	—	—	—
16. Manchester, . . .	2,618	1	—	—	1
17. Marblehead, . . .	7,209	3	6	—	9
18. Merrimac, . . .	1,884	3	5	3	11
19. Methuen, . . .	8,676	2	2	—	4

Essex County — Concluded.

CITIES AND TOWNS.	Popula- tion.	Incipient.	Advanced.	Far Advanced.	Totals.
20. Middleton, . . .	1,068	—	2	1	3
21. Nahant, . . .	922	—	—	—	—
22. Newbury, . . .	1,480	—	—	—	—
23. Newburyport, . .	14,675	34	13	11	58
24. North Andover, .	4,614	2	—	—	2
25. Peabody, . . .	13,098	13	8	9	30
26. Rockport, . . .	4,447	2	2	2	6
27. Rowley, . . .	1,388	4	—	—	4
28. Salem, . . .	37,627	28	27	8	63
29. Salisbury, . . .	1,622	1	—	—	1
30. Saugus, . . .	6,253	3	3	—	6
31. Swampscott, . . .	5,141	2	1	1	4
32. Topsfield, . . .	1,095	3	1	—	4
33. Wenham, . . .	924	—	—	—	—
34. West Newbury, .	1,405	—	1	—	1
Totals, . . .	—	350	264	138	752

The number of incipient cases reported from Essex County is 350, the number of advanced and far advanced is 402, the total number of all forms of the disease is 752; 464 physicians were asked to report by mail, 84 failed to reply.

Franklin County.

CITIES AND TOWNS.	Popula- tion.	Incipient.	Advanced.	Far Advanced.	Totals.
1. Ashfield, . . .	959	2	—	—	2
2. Bernardston, . .	769	1	1	—	2
3. Buckland, . . .	1,500	—	—	1	1
4. Charlemont . . .	1,002	—	—	—	—
5 Colrain, ...	1,780	—	3	1	4
6. Conway, ...	1,340	—	1	1	2
7. Deerfield, . . .	2,112	—	—	1	1
8. Erving, ...	1,094	—	—	—	—
9. Gill, ...	1,023	2	—	—	2
10. Greenfield, . .	9,156	6	7	6	19
11. Hawley, ...	448	—	—	—	—
12. Heath, ...	356	—	—	—	—
13. Leverett, . . .	703	—	—	—	—
14. Leyden, ...	408	—	—	—	—
15. Monroe, ...	269	—	—	—	—
16. Montague, . . .	7,015	11	7	3	21
17. New Salem, . .	672	—	—	2	2
18. Northfield, . .	2,017	2	—	2	4
19. Orange, ...	5,578	4	3	—	7
20. Rowe, ...	533	—	—	—	—
21. Shelburne, . . .	1,515	4	2	2	8
22. Shutesbury, . .	374	—	—	—	—
23. Sunderland, . .	910	—	2	—	2
24. Warwick, ...	527	—	—	—	—
25. Wendell, ...	480	—	—	—	—
26. Whately, ...	822	—	—	—	—
Totals, ...	—	32	26	19	77

The number of incipient cases reported from Franklin County is 32, the number of advanced and far advanced is 45, the total number of all forms of the disease is 77; 57 physicians were asked to report by mail, 5 failed to reply.

Hampden County.

CITIES AND TOWNS.	Popula- tion.	Incipient.	Advanced.	Far Advanced.	Totals.
1. Agawam, . . .	2,795	—	—	—	—
2. Blandford, . . .	746	—	—	—	—
3. Brimfield, . . .	894	—	3	—	3
4. Chester, . . .	1,366	8	4	2	14
5. Chicopee, . . .	20,191	7	5	2	14
6. East Longmeadow, . . .	1,327	1	—	—	1
7. Granville, . . .	865	—	—	—	—
8. Hampden, . . .	561	—	1	—	1
9. Holland, . . .	151	—	—	—	—
10. Holyoke, . . .	49,934	80	58	30	168
11. Longmeadow, . . .	964	—	—	—	—
12. Ludlow, . . .	3,881	—	—	—	—
13. Monson, . . .	4,344	8	2	2	12
14. Montgomery, . . .	259	—	—	—	—
15. Palmer, . . .	7,755	8	8	5	21
16. Russell, . . .	1,053	—	—	—	—
17. Southwick, . . .	1,048	3	—	1	4
18. Springfield, . . .	73,540	108	59	32	199
19. Tolland, . . .	274	—	—	—	—
20. Wales, . . .	645	2	1	—	3
21. Westfield, . . .	13,611	8	6	2	16
22. West Springfield, . . .	8,101	2	—	1	3
23. Wilbraham, . . .	1,708	10	—	—	10
Totals, . . .	—	245	147	77	469

The number of incipient cases reported from Hampden County is 245, the number of advanced and far advanced is 224, the total number of all forms of the disease is 469; 268 physicians were asked to report by mail, 62 failed to reply.

Hampshire County.

CITIES AND TOWNS.	Popula- tion.	Incipient.	Advanced.	Far Advanced.	Totals.
1. Amherst, . . .	5,313	1	1	—	2
2. Belchertown, . . .	2,088	3	2	2	7
3. Chesterfield, . . .	563	1	—	—	1
4. Cummington, . . .	740	2	—	—	2
5. Easthampton, . . .	6,808	1	1	—	2
6. Enfield, . . .	973	—	—	—	—
7. Goshen, . . .	277	—	—	—	—
8. Granby, . . .	747	1	—	—	1
9. Greenwich, . . .	475	—	—	—	—
10. Hadley, . . .	1,895	—	—	—	—
11. Hatfield, . . .	1,779	7	1	—	8
12. Huntington, . . .	1,451	—	—	1	1
13. Middlefield, . . .	399	—	—	—	—
14. Northampton, . . .	19,957	14	16	7	37
15. Pelham, . . .	460	—	—	—	—
16. Plainfield, . . .	382	—	—	—	—
17. Prescott, . . .	322	—	—	—	—
18. Southampton, . . .	927	—	—	—	—
19. South Hadley, . . .	5,054	2	—	—	2
20. Ware, . . .	8,594	8	7	3	18
21. Westhampton, . . .	466	—	—	—	—
22. Williamsburg, . . .	1,943	—	—	1	1
23. Worthington, . . .	614	—	—	—	—
Totals, . . .	—	40	28	14	82

The number of incipient cases reported from Hampshire County is 40, the number of advanced and far advanced is 42, the total number of all forms of the disease is 82; 79 physicians were asked to report by mail, 14 failed to reply.

Middlesex County.

CITIES AND TOWNS.	Popula- tion.	Incipient.	Advanced.	Far Advanced.	Totals.
1. Acton, . . .	2,089	—	1	—	1
2. Arlington, . . .	9,668	5	7	2	14
3. Ashby, . . .	865	—	—	—	—
4. Ashland, . . .	1,597	—	—	1	1
5. Ayer, . . .	2,386	7	3	3	13
6. Bedford, . . .	1,208	1	—	—	1
7. Belmont, . . .	4,360	11	—	1	12
8. Billerica, . . .	2,843	—	—	—	—
9. Boxborough, . . .	324	—	—	—	—
10. Burlington, . . .	588	—	—	—	—
11. Cambridge, . . .	97,434	79	51	41	171
12. Carlisle, . . .	523	—	—	—	—
13. Chelmsford, . . .	4,254	4	2	1	7
14. Concord, . . .	5,421	—	2	—	2
15. Dracut, . . .	3,537	—	—	—	—
16. Dunstable, . . .	412	—	—	—	—
17. Everett, . . .	29,111	19	10	9	38
18. Framingham, . . .	11,548	10	6	5	21
19. Groton, . . .	2,253	4	2	1	7
20. Holliston, . . .	2,663	1	1	—	2
21. Hopkinton, . . .	2,585	1	1	—	2
22. Hudson, . . .	6,217	1	1	2	4
23. Lexington, . . .	4,530	—	1	1	2
24. Lincoln, . . .	1,122	1	—	—	1
25. Littleton, . . .	1,219	—	—	—	—
26. Lowell, . . .	94,889	115	81	51	247
27. Malden, . . .	38,037	38	33	14	85
28. Marlborough, . . .	14,073	20	19	16	55
29. Maynard, . . .	5,811	4	2	2	8
30. Medford, . . .	19,686	7	12	1	20
31. Melrose, . . .	14,295	34	14	6	54
32. Natick, . . .	9,609	16	9	4	29
33. Newton, . . .	38,827	34	17	5	56
34. North Reading, . . .	903	—	—	—	—
35. Pepperell, . . .	3,268	1	—	1	2
36. Reading, . . .	5,682	15	7	4	26
37. Sherborn, . . .	1,379	—	—	—	—

Middlesex County — Concluded.

CITIES AND TOWNS.	Popula- tion.	Incipient.	Advanced.	Far Advanced.	Totals.
38. Shirley, . . .	1,692	—	1	1	2
39. Somerville, . .	69,272	32	17	23	72
40. Stoncham, . . .	6,332	4	3	1	8
41. Stow, ...	1,027	—	—	—	—
42. Sudbury, . . .	1,159	—	1	—	1
43. Tewksbury, . .	4,415	1	—	—	1
44. Townsend, . . .	1,772	1	2	—	3
45. Tyngsborough, .	768	4	2	1	7
46. Wakefield, . . .	10,268	21	13	5	39
47. Waltham, . . .	26,282	28	19	8	55
48. Watertown, . .	11,258	6	4	2	12
49. Wayland, . . .	2,220	2	—	—	2
50. Westford, . . .	2,413	2	—	—	2
51. Weston, ...	2,091	3	—	—	3
52. Wilmington, . .	1,670	1	—	—	1
53. Winchester, . .	8,242	6	5	1	12
54. Woburn, ...	14,402	11	6	5	22
Totals, ...	—	550	355	218	1,123

The number of incipient cases reported from Middlesex County is 550, the number of advanced and far advanced is 573, the total number of all forms of the disease is 1,123; 813 physicians were asked to report by mail, 194 failed to reply.

Nantucket County.

TOWNS.	Popula- tion.	Incipient.	Advanced.	Far Advanced.	Totals.
1. Nantucket, . . .	2,930	1	2	2	5

The number of incipient cases reported from Nantucket County is 1, the number of advanced and far advanced is 4, the total number of all forms of the disease is 5; 6 physicians were asked to report by mail, 2 failed to reply.

Norfolk County.

CITIES AND TOWNS.	Popula- tion.	Incipient.	Advanced.	Far Advanced.	Totals.
1. Avon, . . .	1,901	—	1	—	1
2. Bellingham, . . .	1,686	3	—	—	3
3. Braintree, . . .	6,879	9	4	—	13
4. Brookline, . . .	23,436	15	15	9	39
5. Canton, . . .	4,702	22	6	3	31
6. Cohasset, . . .	2,727	6	—	—	6
7. Dedham, . . .	7,774	17	6	2	25
8. Dover, . . .	636	—	—	—	—
9. Foxborough, . . .	3,364	10	1	1	12
10. Franklin, . . .	5,244	6	3	1	10
11. Holbrook, . . .	2,509	3	1	—	4
12. Hyde Park, . . .	14,510	5	5	2	12
13. Medfield, . . .	3,314	9	4	6	19
14. Medway, . . .	2,650	1	1	—	2
15. Millis, . . .	1,252	—	—	—	—
16. Milton, . . .	7,054	—	2	—	2
17. Needham, . . .	4,284	1	2	—	3
18. Norfolk, . . .	1,089	—	—	—	—
19. Norwood, . . .	6,731	3	5	5	13
20. Plainville, . . .	1,300	—	—	—	—
21. Quincy, . . .	28,076	36	24	18	78
22. Randolph, . . .	4,034	33	4	3	40
23. Sharon, . . .	2,085	2	4	3	9
24. Stoughton, . . .	5,959	12	6	5	23
25. Walpole, . . .	4,003	2	2	5	9
26. Wellesley, . . .	6,189	2	1	—	3
27. Westwood, . . .	1,136	—	—	—	—
28. Weymouth, . . .	11,585	10	9	4	23
29. Wrentham, . . .	1,428	1	—	—	1
Totals, . . .	—	208	106	67	381

The number of incipient cases reported from Norfolk County is 208, the number of advanced and far advanced is 173, the total number of all forms of the disease is 381; 261 physicians were asked to report by mail, 39 failed to reply.

Plymouth County.

CITIES AND TOWNS.	Popula- tion.	Incipient.	Advanced.	Far Advanced.	Totals.
1. Abington, . . .	5,081	2	2	1	5
2. Bridgewater, . . .	6,754	7	2	—	9
3. Brockton . . .	47,794	107	138	43	288
4. Carver, . . .	1,410	—	1	1	2
5. Duxbury, . . .	2,028	—	—	—	—
6. East Bridgewater, . . .	3,169	2	1	—	3
7. Halifax, . . .	494	—	—	—	—
8. Hanover, . . .	2,176	3	1	1	5
9. Hanson, . . .	1,490	—	—	—	—
10. Hingham, . . .	4,819	3	1	—	4
11. Hull, . . .	2,060	—	—	—	—
12. Kingston, . . .	2,205	3	2	—	5
13. Lakeville, . . .	912	—	—	—	—
14. Marion, . . .	1,029	—	—	—	—
15. Marshfield, . . .	1,763	—	1	2	3
16. Mattapoisett, . . .	1,180	1	1	1	3
17. Middleborough, . . .	6,888	7	2	6	15
18. Norwell, . . .	1,534	—	1	—	1
19. Pembroke, . . .	1,261	—	1	4	5
20. Plymouth, . . .	11,119	8	4	2	14
21. Plympton, . . .	514	—	—	—	—
22. Rochester, . . .	1,181	—	—	—	—
23. Rockland, . . .	6,287	4	4	4	12
24. Scituate, . . .	2,597	3	1	—	4
25. Wareham, . . .	3,660	2	3	—	5
26. West Bridgewater, . . .	2,006	—	4	—	4
27. Whitman, . . .	6,521	2	7	3	12
Totals, . . .	—	154	177	68	399

The number of incipient cases reported from Plymouth County is 154, the number of advanced and far advanced is 245, the total number of all forms of the disease is 399; 152 physicians were asked to report by mail, 8 failed to reply.

Suffolk County.

CITIES AND TOWNS.	Popula- tion.	Incipient.	Advanced.	Far Advanced.	Totals.
1. Boston, . . .	595,380	—	—	1,084	1,084 ¹
2. Chelsea, . . .	37,289	17	12	7	36
3. Revere, . . .	12,659	7	—	1	8
4. Winthrop, . . .	7,034	7	1	—	8
Totals, . . .	—	31	13	1,092	1,136

The number of incipient cases reported from Suffolk County, with the exception of Boston, is 31, the number of advanced and far advanced is 21, the total number of all forms of the disease is 52; 42 physicians were asked to report by mail, 13 failed to reply.

¹ The total number of cases given as reported from Boston is the number reported to the Board of Health since Jan. 1, 1904, when complete registration first began in that city, less the number that have died or moved away from the city.

Worcester County.

CITIES AND TOWNS.	Popula- tion.	Incipient.	Advanced.	Far Advanced.	Totals.
1. Ashburnham, . . .	1,851	2	1	—	3
2. Athol, . . .	7,197	2	4	1	7
3. Auburn, . . .	2,006	—	—	—	—
4. Barre, . . .	2,558	1	—	—	1
5. Berlin, . . .	906	—	—	1	1
6. Blackstone, . . .	5,786	9	8	4	21
7. Bolton, . . .	762	—	—	—	—
8. Boylston, . . .	649	—	—	—	—
9. Brookfield, . . .	2,388	3	—	—	3
10. Charlton, . . .	2,089	—	—	—	—
11. Clinton, . . .	13,105	10	13	8	31
12. Dana, . . .	763	—	—	—	—
13. Douglas, . . .	2,120	1	—	2	3
14. Dudley, . . .	3,818	—	2	—	2
15. Fitchburg, . . .	33,021	22	18	1	41
16. Gardner, . . .	12,012	14	13	6	33
17. Grafton, . . .	5,052	3	—	—	3
18. Hardwick, . . .	3,261	13	7	1	21
19. Harvard, . . .	1,077	—	—	—	—
20. Holden, . . .	2,640	4	3	3	10
21. Hopedale, . . .	2,048	—	4	—	4

Worcester County — Continued.

CITIES AND TOWNS.	Popula- tion.	Incipient.	Advanced.	Far Advanced.	Totals.
22. Hubbardston, . .	1,205	2	4	3	9
23. Lancaster, . .	2,406	1	2	1	4
24. Leicester, . .	3,414	4	1	1	6
25. Leominster, . .	14,297	33	15	10	58
26. Lunenburg, . .	1,293	—	—	—	—
27. Mendon, . .	922	—	—	—	—
28. Milford, . .	12,105	24	16	9	49
29. Millbury, . .	4,631	7	6	3	16
30. New Braintree, . .	477	—	—	—	—
31. Northborough, . .	1,947	8	5	4	17
32. Northbridge, . .	7,400	10	4	4	18
33. North Brookfield, . .	2,617	1	1	—	2
34. Oakham, . .	519	—	—	—	—
35. Oxford, . .	2,927	2	1	1	4
36. Paxton, . .	444	—	—	—	—
37. Petersham, . .	855	1	—	—	1
38. Phillipston, . .	442	—	—	—	—
39. Princeton, . .	907	—	1	—	1
40. Royalston, . .	903	—	—	—	—
41. Rutland, ¹ . .	1,713	24	65	16	105
42. Shrewsbury, . .	1,866	—	—	—	—
43. Southborough, . .	1,931	1	1	4	6
44. Southbridge, . .	11,000	12	9	3	24
45. Spencer, . .	7,121	7	5	1	13
46. Sterling, . .	1,315	—	—	—	—
47. Sturbridge, . .	1,974	—	1	—	1
48. Sutton, . .	3,173	2	1	1	4
49. Templeton, . .	3,783	2	3	1	6
50. Upton, . .	2,024	—	1	—	1
51. Uxbridge, . .	3,881	5	—	1	6
52. Warren, . .	4,300	1	—	—	1
53. Webster, . .	10,018	6	2	4	12
54. Westborough, . .	5,378	3	3	2	8
55. West Boylston, . .	1,571	—	—	—	—
56. West Brookfield, . .	1,384	—	—	—	—
57. Westminster, . .	1,348	—	—	—	—

¹ These cases were reported as being in the boarding-houses.

Worcester County—Concluded.

CITIES AND TOWNS.	Popula- tion.	Incipient.	Advanced.	Far Advanced.	Totals.
58. Winchendon, . . .	5,933	13	7	2	22
59. Worcester, . . .	128,135	307	201	132	640
Totals, . . .	—	560	428	230	1,218

The number of incipient cases reported from Worcester County is 560, the number of advanced and far advanced is 658, the total number of all forms of the disease is 1,218; 502 physicians were asked to report by mail, 109 failed to reply.

The report from the State Sanatorium at Rutland is given under a separate table.

*Number of Cases at the Massachusetts State Sanatorium at Rutland,
allotted to their Respective Cities and Towns.*

Agawam, ...	1	Manchester, ...	1
Allston, ...	2	Medford, ...	3
Arlington, ...	1	Melrose, ...	3
Ashland, ...	1	Millville, ...	2
Attleborough, ...	1	Milton, ...	1
Boston, ...	115	Montello, ...	1
Braintree, ...	1	New Bedford, ...	5
Brighton, ...	2	Newburyport, ...	1
Broekton, ...	8	Newtonville, ...	3
Brookline, ...	4	Norwood, ...	1
Cambridge, ...	22	North Adams, ...	2
Charlestown, ...	5	Northampton, ...	2
Chelsea, ...	5	North Chelmsford, ...	1
Chicopee Falls, ...	1	Oxford, ...	1
Cliftondale, ...	1	Pittsfield, ...	3
Clinton, ...	1	Plymouth, ...	1
Cohasset, ...	1	Quincy, ...	3
Danvers, ...	3	Revere, ...	1
East Pembroke, ...	1	Rockland, ...	1
East Pepperell, ...	1	Roslindale, ...	1
East Watertown, ...	1	Somerset, ...	1
Everett, ...	4	Somerville, ...	10
Fall River, ...	8	South Sandwich, ...	1
Fitchburg, ...	3	Springfield, ...	4
Forest Hills, ...	1	Taunton, ...	1
Foxborough, ...	1	Wakefield, ...	1
Gloucester, ...	2	Walpole, ...	1
Greenfield, ...	3	Webster, ...	1
Haverhill, ...	5	Wellesley, ...	2
Holyoke, ...	6	West Brookfield, ...	1
Hyde Park, ...	1	West Gardner, ...	1
Lawrence, ...	7	West Newton, ...	2
Leicester, ...	1	Westfield, ...	4
Leominster, ...	3	Wilbraham, ...	1
Lowell, ...	7	Winchester, ...	1
Lynn, ...	10	Woburn, ...	1
Malden, ...	9	Worcester, ...	15
Marlborough, ...	2		
Marshfield, ...	1	Total, ...	338

The number of incipient cases reported at the Massachusetts State Sanatorium at Rutland is 87, the total number of advanced cases is 251, the total number of all forms of the disease is 338.

Some of these cases may possibly have been reported by the physicians in the towns where they reside, but from inquiries made in Bristol and Berkshire counties it is believed that this is not the case.

2. AS TO APPROPRIATE AND AVAILABLE SITES FOR A HOSPITAL OR HOSPITALS FOR THE CARE AND TREATMENT OF SUCH SUFFERERS.

An appropriate site for a tuberculosis hospital should be so located as to give a direct southern exposure, upon ground with a sub-soil that provides good drainage; and it should be elevated above the surrounding country enough to escape the fogs that sometimes arise from the low lands. If the elevation is considerable, the site should be protected from the north winds by a growth of trees. The grounds which surround the hospital should be sufficiently extensive to make it impossible for the atmosphere about the buildings to ever become contaminated by smoke from factories or by dust from much-travelled roads, and there should be sufficient foliage to furnish an abundance of shade during the summer months.

A supply of pure water and an opportunity for the disposal of sewage are, of course, matters which must not be forgotten.

The number of cases of tuberculosis that have been successfully treated, both at home and in sanatoria, in places at a low elevation, near the sea and under diverse conditions of weather and seasons, is now much too large to make it necessary to consider the question of altitude or climate as of controlling importance when choosing the site for a hospital.

When the hospital is to be used for the purpose of treating persons affected with consumption in an advanced form, it must not be located far from the centers of population, because such sufferers could not comfortably travel any great distance in order to reach it; and, they being seriously ill, their friends would want the privilege of visiting them often, which would entail considerable expense to them if the hospital were not so situated. Such a hospital should be near some through lines of railroad, and if it could also be reached by electric cars, this would be an additional advantage.

As regards available sites, the commission is unanimously of the opinion that many such locations as has been described could easily be found in every county and in the neighborhood of nearly every municipality in the State.

3. AS TO THE PROBABLE COST TO THE COMMONWEALTH OF ERECTING AND MAINTAINING HOSPITALS ADEQUATE FOR SUCH TREATMENT.

Hospital buildings for consumptives may be comparatively simple in arrangement and construction, as they do not require the variety of services and appliances which are needed in general hospitals. The essential thing to be kept in mind is that all rooms occupied by the patients shall have as much air and sunshine as possible, the modern treatment of consumption being to a great extent based on the fact that the infectious bacillus of tuberculosis, which may survive months of drying in the dark, treatment with acids, and even boiling, dies in a few minutes when exposed to direct sunlight with free access of air. The rooms where the patients sleep should, therefore, be exposed as freely as possible both to air and sun. An aspect directly south is the most favorable, as the room is thus best sheltered from cold winds, and the sunlight sweeps over its whole area.

Experience shows that the tubercle bacilli, which are liable to be scattered by coughing or otherwise in the bedrooms occupied by the patients, are rarely if ever found on the walls at a greater height than 4 feet from the floor; and, with windows sufficiently large and not shaded in any way, a due south aspect permits the sunshine, in rooms of the proper size, to reach substantially every portion of the floor and of the walls to a height of 4 feet above the floor.

In all modern sanatoria for tuberculous patients, except those intended for children, each patient has a separate bedroom; freedom from disturbance, through the coughing of neighboring patients or otherwise, being of such importance to the success of the treatment as far to outweigh the consideration of a small economy in the original outlay. Experience has shown that a bedroom 10 feet wide and 14 feet deep best combines the requisites of economy, convenience and proper lighting. The height should not be less than 9 feet, but more than 10 feet is unnecessary. The south end should be practically all window. It will generally be necessary to put a mullion in the middle, so as to reduce the sashes to a size convenient for handling; but the space on each

side should be filled with sashes, extending from a point not more than 2 feet above the floor to within an inch of the ceiling. It is best to divide the windows into three sashes in height. Not only are the sashes thus more easily handled, but, as the three can be moved into the space of one, two-thirds of the windows can be opened. The bedrooms should open from a corridor well supplied with windows; then, with the windows in the bedrooms and the corridor open, air will pass freely between them through the door of the bedroom or through a window, which it is desirable to place in the north wall of the bedroom in addition to the door. This window may be covered with blind slats for privacy, the essential object being to secure an equable flow of air through every part of the room, — from end to end, from side to side and from floor to ceiling.

For the sake of economy with reference to administration, it might be deemed advisable to provide small wards for the less advanced cases, that is, those in whom the cough is not troublesome and the physical condition is such that they need not stay in bed. As a rule, one nurse is considered fully able to care for eight patients, and consequently the wards should be planned to contain that number of beds. In building in accordance with the ideas advanced above, small wards with balconies can be placed on the ground floor, and single rooms on the second story.

If the dormitories to be used by the patients are constructed in this manner, and with the longest diameter from east to west, so as to give full southern exposure, it will be very difficult to improve upon such an arrangement, either from an economical standpoint, or for the purpose of increasing the comfort of the patient.

Since the temperature of a bedroom or ward so fully aerated as is necessary to the cure, and as is agreeable to the patients after they have acquired the "air hunger," as the German specialists call it, is likely to fall below the freezing point in winter, it is better not to require the patients to wash and dress in their rooms in the coldest weather, but to provide a dressing room of sufficient size for every 6 or 8 patients. It should be well warmed, and, if possible, exposed to full sun-

shine, where they can dress in comfort, and where their day clothes can be kept with greater safety to themselves and others than if hung up in their bedrooms, which latter should always be free from everything that can receive or disseminate dust or infection. With each dressing room is connected a lavatory and bath room, which share the sunshine with the other portions of the room. The corridor should also be well heated, by direct radiation, so that the patients, in two or three steps from their beds, can reach a warm floor and a warm atmosphere without closing the windows of their bedrooms. This is in practice a much more satisfactory and economical arrangement than the old-fashioned one of shutting all the windows in the bedrooms for half an hour in the morning and evening, so as to raise all the rooms at once to a temperature of 70° , to the annoyance and even the peril of those too weak to leave their beds. It does not follow that the bedrooms should be incapable of being heated at all; on the contrary, it is desirable to run a line of steam or hot-water pipes through them, to which additional radiating surface can be connected in case of need. But in general the heat desired for tempering the air in the bedrooms should be obtained by opening the doors and windows into the corridor, in preference to tightly closing the bedrooms.

Each portion of the patients' part of the establishment should be planned for not more than 25 persons, this being the maximum number that one nurse with two assistants can properly attend to; and each building should have at least one nurse's room, and a doctor's room where medicine can be kept and examinations made. If the buildings are two stories high, there should be a nurse's room on each floor. This will give 12 patients' bedrooms, a nurse's room and a doctor's room in the first story, and 13 patients' bedrooms and a nurse's room in the second story, besides two dressing rooms in each story. An establishment with four such wards will accommodate 100 patients; and two more wards of the same kind can easily be added, increasing the accommodation to 150, without materially changing the administration portion of the building.

This administration portion must consist of dining rooms

for the patients; kitchen and pantries; offices for the medical director, the bookkeeper or steward and the matron; a work and storeroom for the matron; at least two examination rooms for the physicians; and bedrooms for the house officers, the nurses and servants; and to these must be added a boiler room and laundry. The latter may be one story buildings, with concrete floor; the main administration building may be three stories high, which will give all the room required. The patients' dining rooms should have windows extending to the ceiling on at least two sides, and one of these sides should face the south. A room 50 by 20 feet is large enough for 50 patients at small tables, which is the pleasantest arrangement; in this case one of the long sides should look toward the south. In private sanatoria the male and female patients usually have their meals together, but in public establishments the sexes are separated. The kitchen is best placed in the third story, communicating by lifts with the pantries and basement storerooms; and bedrooms for officers, nurses and servants will be arranged as circumstances may dictate, — remembering that the nurses' quarters should be entirely separated from those allotted to the servants, that each nurse should have a bedroom to herself, and that a small parlor or library should be provided, where those off duty may rest from their arduous labors. Sanatorium nurses and house officers usually take their meals with the patients, whom they can thus supervise at a very important time; but the servants should have a separate dining room, which will also answer as their sitting room. Bath rooms should be scattered among the bedrooms.

Where the ground permits, it contributes much to the comfort of the patients to provide lavatories in the basement, and storerooms for croquet sets and gardening tools. All such basements should be enough above the ground level to receive sufficient air and light to prevent dark recesses and dampness.

A sanatorium of this kind for 100 patients can be built in most parts of Massachusetts, of ordinary frame construction, clapboarded, painted and plastered, for \$50,000, including heating, lighting and plumbing. It would not be fireproof, but could be made nearly so by using metal lath throughout

for plastering, at an additional cost of about \$5,000. If the same plan were carried out in thoroughly fireproof construction, of brick and concrete, the cost would be about \$75,000. These prices are for the building alone, without the land. If the wards are of two stories, they should be placed in parallel lines, 100 feet apart, to secure ample sunshine in all the rooms; and, with sufficient space for the administration buildings, driveways, etc., they will occupy something less than two acres of land.

The commission communicated with the superintendents of a large number of sanatoria and hospitals devoted to tuberculosis, and obtained a great deal of information with relation to maintenance. From these data the inference has been drawn that as a rule it costs not less than \$7 nor more than \$9 per week per patient to support public hospitals for the treatment of this disease.

4. AS TO THE ADVISABILITY OF THE UNDERTAKING BY THE COMMONWEALTH OF THE CARE AND TREATMENT OF SUCH SUFFERERS.

After due deliberation upon this most important subject, the commission decided that some systematic plan for aiding persons suffering with consumption and for eradicating the disease must be established by the Commonwealth. In order to obtain an expression of public opinion as to the best methods to be adopted, a public hearing, duly advertised, was held at the State House, Boston, on Dec. 10, 1906. A large number of persons particularly interested in the tuberculosis problem were present, in spite of inclement weather, and expressed their views. The ideas advanced at this hearing differed somewhat as to the manner in which the work ought to be done, but agreed to a remarkable extent as to the necessity for thorough and concerted action.

Before stating fully the plans which the commission believes should be adopted, it is in order to describe the nature of the disease, its prevention and its cure, and to give reasons for the conclusions which have been reached.

Nature and History of the Disease.

The disease called tuberculosis is one of the oldest known to man, and up to the year 1882, when Koch discovered its cause to be a microscopic germ, was generally thought to be incurable. At that time renewed interest was awakened among the medical profession, and its attention was called to the work of Brehmer, who in 1859 had established a sanatorium at Görbersdorf, Germany. He and his successor, Dettweiler, elaborated the system for the treatment of pulmonary tuberculosis by fresh air, rest and proper diet, which has gradually come to be recognized as the rational method of opposing this disease. It is true that in 1840 Dr. G. Bodington of Sutton Goldfield, Warwickshire, England, published his views as to the correct treatment of consumption, and that his system closely foreshadowed the one now in vogue; but his ideas were so radically different from those already held that they were soon forgotten, — to be, as is commonly the case, rediscovered almost a generation later.

As far back as the vital statistics of Massachusetts have been compiled, the death rate from consumption has been so great as to be appalling. For fifty years or over the deaths from consumption in Massachusetts have been more than 5,000 per year. In other words, for at least half a century no less than 400 persons in the State have died every month of a disease which is curable, and, above all, preventable.

The word "tuberculosis" is usually associated with disease of the lungs, and this is by far the most frequent and deadly form in which it occurs; but every organ and tissue of the body may be affected by a tuberculous process. Hydrocephalus is tuberculosis of the coverings of the brain; scrofula, as generally seen, is tuberculosis of the glands in the neck; lupus is the same thing in the skin; tabies mesenterica is tuberculosis in the lymph glands of the abdomen; hip disease and diseases of the spine are manifestations of tuberculosis in the bone.

Tuberculosis affects not only mankind, but the lower animals when domesticated and confined, more especially the cow; sometimes also the pig, the fowl, the cat and the

monkey. But in all cases the only cause of the disease is the tubercle bacillus, a micro-organism which under the most favorable circumstances grows very slowly as compared with other disease-producing microbes, and these circumstances must always be maintained for weeks continuously. Its growth is much enfeebled at a temperature of 86° F., and entirely ceases below 82° F. or above 108° F. On the other hand, this microbe flourishes at the natural deep temperature of the human body, namely, 99° to 100° F. The essentials upon which its growth depends are moisture, a limited supply of air and an entire absence of light, — conditions which can only be found inside the animal body. The tubercle bacillus, therefore, cannot grow outside the body, — it can merely exist; and that, too, under certain condition and under any conditions for only a limited period of time. Direct sunlight will kill it in a few minutes, ordinary daylight in a few days, whether exposed in sputum or in dust; and in each case free-flowing air makes the light more effective. The reverse — darkness and stagnant air — favors the life of the bacillus. It possesses no power of locomotion, but must rely upon some other agent to carry it back to its natural habitat, the animal body.

In a recent article Theobald Smith has described the mode of invasion of the tubercle bacillus into the animal body as being in four different ways: —

I. By congenital transference.

II. By infection through the ingestion of tuberculous meat or milk.

III. By the inhalation of the dried sputum.

IV. By the taking in of moist particles, or spray infection.

Three portals of entry are given: the upper respiratory tract (the mouth and nose), the lungs themselves, and the small intestines.

I. BY CONGENITAL TRANSFERENCE. — Although certain German experimentalists believe that the disease may be latent in infants born of tuberculous mothers, because they have obtained a tuberculin reaction in some of these babies, yet it is certainly the prevailing opinion among those who have spent the most time in studying tuberculosis that it

is never inherited, or at least so seldom as not to be worthy of consideration; although, of course, a susceptibility on the part of the individual may be constitutional, and may be so great and so marked as to amount to a predisposition.

II. BY INFECTION THROUGH THE INGESTION OF TUBERCULOUS MEAT OR MILK. — Behring has advanced the theory that tuberculosis is generally the result of the absorption of the bacillus in infancy from tuberculous milk, the germ remaining quiescent in the glands for years, and causing all the manifestations of the disease which occur later in life. Kitasato, however, has controverted this hypothesis by calling attention to the fact that, although the cattle in Japan are not affected, and milk is not used as a food for infants, yet human tuberculosis is as prevalent in that country as elsewhere. The statement that tuberculosis is common among a people who do not eat meat disposes also of the idea that tuberculous meat is a frequent means of entry for the disease. Furthermore, it can justly be said that at the present time the precautions being taken by the national government as regards meat inspection, and by the State Board of Health through inspection of dairies and analyses of milk, are sufficient to make the danger from either meat or milk very slight. Recent investigations made by the United States Bureau of Animal Industry have conclusively proved, however, that milk contaminated with the fæces from tuberculous cows will cause tuberculosis in calves or pigs when fed to them; and, although the morphological differences between the bovine and the human tubercle bacillus may be associated with a biological dissimilarity, yet it is highly probable that neither one is confined for its host to the specific animal, and that the former is sometimes a source of the disease in the human body, unclean milk being the medium through which entrance is made. The bovine bacillus is considered far more virulent than the human, and it is possible that at least some of the rapidly progressing cases of consumption are due to this particular type of the organism.

III. BY THE INHALATION OF THE DRIED SPUTUM; IV. BY THE TAKING IN OF MOIST PARTICLES, OR SPRAY INFECTION. — There remain, then, two ways commonly considered as by far the most frequent, by which these bacteria can enter the

body; one through the inhalation of dust containing the dried sputum; and the other by the taking in of the sputum when in a moist condition.

The inception of the moist sputum may take place whenever a consumptive coughs or talks; or, again, the sputum may become attached to anything which the sick and well use in common, — such as crockery, glassware, pencils, towels, etc., — and thus be carried into the mouth. Until recent years the dried sputum has been thought to be the principal source of contagion; but the work of Flugge and others has convinced many students of the subject that the disease spreads as often through moist sputum as in any other way. The drying process which turns the sputum into dust is so liable to destroy all the microbes contained in it that even the tubercle bacillus is apt to be destroyed, although it has a tenacity for life unequalled by any other micro-organism. In the nose, mouth and throat of a healthy person disease germs such as those which cause diphtheria, pneumonia, tuberculosis, etc., can quite frequently be found, and they are very often present when one is sick with any of these diseases. Hence, it seems rational to believe that the disease is fostered and spread by persons, though unwittingly, quite as much as by things, — that is, by dust, — carrying germs which have been submitted to a process that not infrequently causes their death.

But whether the microbe is carried into the system when in a moist condition, or when dry and in the form of dust, is a question upon which it is necessary to spend but little time; because, while infection may take place in either case, the main fact to be remembered and dwelt upon is, that it is the sputum containing the tubercle bacillus which must always be summarily dealt with.

All authorities upon the subject are agreed upon the paramount necessity for destroying the sputum of a consumptive.

While, perhaps, it will have to be acknowledged that tuberculosis will never be totally exterminated, yet it is probable that one of the greatest advances in preventive medicine that has ever been witnessed is about to take place in the early part of the twentieth century. Certainly we ought to

be able to make deaths from consumption as rare as those from diphtheria have become since the State Board of Health introduced antitoxin, if not as rare as small-pox since vaccination was established.

Prevention.

How, then, shall the State proceed to bring about such a radical diminution of the disease?

I. BY COMPULSORY NOTIFICATION AND REGISTRATION. — In the first place, the Legislature should amend the laws relating to public health so as to include pulmonary tuberculosis, or consumption, among the diseases specifically mentioned as being dangerous to the public health. This will make it obligatory on the part of the householder or the attending physician to notify the local board of health of the presence of the disease. Upon that board would then fall the duty of keeping a registry of the case, and of seeing that all the laws applicable to diseases dangerous to the public health are observed by the one afflicted and by the persons who live with him. In this way, and in this way only, can each individual case be reached, — which is the *sine qua non* of the whole situation.

Circulars can then be sent containing information as to how the disease spreads, personal visits may be made, and assistance rendered when necessary. If the doctor reporting the case to the local board of health at the same time requests that his patient should not be visited, his wishes in the matter should be respected, and the usual methods of procedure may be carried out through the attending physician. It is fair to presume that if he reports his cases he will furnish both the patient and the other members of the family with all the necessary instruction; and thus the only real objection to compulsory notification would be removed, and the right of privacy on the part of the sufferer wholly preserved.

Furthermore, the knowledge of the way in which all diseases dangerous to the public health are spread should become common parlance by being taught in the schools and by being printed in simple, concise language and scattered broadcast; then whatever the health officer might say or do would be mere reiteration.

Compulsory notification has been in force in the city of New York for ten years, in Boston for nearly five years, in Cambridge for about two years, and is also required in a few other cities and towns in the State; but, since registration is only a regulation of the local boards of health, it is yet a rule that is respected more in its breach than in its observance. The commission believes that, once registration becomes a State law, the time will not be far off when it will be universally complied with.

Registration is of the utmost importance, both in itself and as a means of education.

II. BY INCREASING THE OPPORTUNITIES FOR THE FREE EXAMINATION OF SPUTUM. — The free examination of sputum for diagnostic purposes, now made by the State Board of Health and by various local boards of health, should in some way be extended so that the country doctor in the districts remote from Boston can more easily avail himself of such valuable assistance. At the present time it is feared that he often neglects this aid to diagnosis, either because he does not happen to have the necessary articles for sending sputum, or else because a considerable length of time may elapse before he can know the result of the examination. Of course in a few cities, where a bacteriologist is employed, this does not hold good, but in many parts of the State it must be true.

Some provision for the free examination of sputum might be made at Rutland, at any other hospitals which the State may erect, and at various sub-stations of the State Board of Health which might be established throughout the Commonwealth.

It is interesting to note, in this connection, that when the State Board of Health began to make examinations of specimens of sputum free of charge in 1895, 124 were made for the physicians in the State; while in 1905, 1,025 specimens were examined.

III. BY EDUCATION. — Not only must the individual be instructed whenever he is so unfortunate as to have tuberculosis, but the public at large must be taught its true nature, its prevention, and the cure. There must be a wide and

general distribution of literature pertaining to the subject; public lectures should be provided; tuberculosis exhibits should be encouraged; and children should be taught in the public schools the manner in which the disease spreads. The commission realizes that the average pupil is even now overburdened with studies; but it thoroughly believes that if matters of practical hygiene were simply and interestingly taught, much lasting benefit would result. All persons are not above learning, even from their children; and the more ignorant the parent, the more willing is he usually to accept advice from a well-informed child. It is important to emphasize, however, in all such instruction, that, while there is a real danger from the communicability of consumption, yet with proper precautions there is essentially no danger from associating even quite intimately with a consumptive.

IV. BY EXTENDING THE SPIT LAW (SO CALLED). — The law which was passed by the Legislature of 1906 (chapter 165, section 1), relating to the prohibition of expectoration in certain public places, should be so amended as to include stores, buildings used for manufacturing purposes, halls of tenements occupied by five or more families, schools and all other public buildings not named in this act. Since it is an indisputable fact that the tubercle bacillus cannot live in the sunlight or air for more than a very few minutes (and if the air is stirring, its length of life is even shorter), while in dark places or merely out of the sun, it may survive at least for months, it is far more important that it should be unlawful to expectorate anywhere within doors rather than out in the open air.

The commission has consulted with those in charge of some of the large manufactories in the State, and, although told that it would be difficult to enforce laws prohibiting spitting on the floors of such buildings, yet by every one in authority a perfect willingness was expressed to use every endeavor to assist in the enforcement of such a law.

V. BY TEACHING AND REQUIRING DISINFECTION ACCORDING TO THE MOST APPROVED METHODS. — Disinfection is either done by the individual, or officially by the health authorities. Individual disinfection should really mean that

continuous attention to absolute cleanliness which the French call "medical antisepsis," and which is most desirable, not only in the management of tuberculosis, but in all communicable diseases. In consumption this consists of the constant use of paper spit-cups or a pocket flask, and paper napkins or cheese cloth, and of carefully washing the tongue, mouth and teeth with soap and water before eating. Soiled clothing and bedding used by a consumptive should be washed separately and boiled, and then dried in the open air. Crockery, glassware, etc., should be scalded with boiling water and then be carefully cleaned. Carbolic acid (1-20) should be poured immediately upon anything, contaminated by sputum, that cannot be destroyed. The hands of the attendants should always be kept scrupulously clean. Thus the spread of the disease can be wholly prevented. Such eternal vigilance seems well-nigh impossible, yet it will soon become a matter of simple routine after it has been carefully performed for a few times by those waiting upon the patient.

The imperative need for the use of paper napkins or cheese cloth, and sputum cups or pocket flasks, when any one has consumption, must be impressed upon the public; and all these things are so important that they should be provided by the proper municipal authorities, or by the State, whenever a patient or his friends are too poor to purchase them.

Individuals must be watchful, and practise the utmost cleanliness.

The official disinfection is usually terminal in character, and for that reason frequently ineffective. It is useless to expect that any amount of disinfection by the health officials after death will limit the spread of the disease, if the patient and his friends have during his life neglected individual cleanliness; because long before the patient dies some others near to him will in all probability have become affected, if the above-described measures have not been taken or have been carelessly performed.

In a paper read before the section on hygiene of the American Medical Association, at the fifty-seventh annual session in Boston, June, 1906, C. V. Chapin, M.D., health officer of

the city of Providence, R. I., very aptly shows the futility of official disinfection as it is usually done. He says:—

A reader of works on hygiene would conclude that disinfection is held in equal esteem with isolation, or is perhaps of even more importance, for it is sometimes expected to work wonders in the prevention of diseases where there has been no isolation, as, for instance, the official disinfection after a case of tuberculosis, when for years there may have been no attempt on the part of the patient to prevent the infection of others.

The direct evidence as to the infection of things is scanty. It must be admitted that there has been very little investigation of this question, although it lies at the basis of sanitary theory and practice. Examinations made in Providence, and by Hill in Boston, show that diphtheria bacilli are rarely found even on objects most likely to be infected by the patient. Tubercle bacilli are more tenacious of life than most common bacteria, yet search made for them on the floor and walls, where they are most likely to be expected, usually fails to reveal them. It is not easy to find pathogenic bacteria outside of the body.

The confidence which the public has in the efficacy of disinfection is the greatest hindrance to the development of better methods of handling disease and guarding against infection. To practise strict personal cleanliness, not only in the presence of contagious disease, but at all times, is the sole mode now known by which such cases can be guarded against. The public, and even the medical profession, still refuse to believe in infection in well persons, but cling to the old notion that it is things, not persons, that are to be feared; and they will cling to this view so long as the health officials lay so much stress on their official disinfection. Many a time a family has lived for months with a consumptive who has taken no precautions with his sputum, and after his death has promptly asked to have the house fumigated. The expiatory sacrifice of disinfection is believed to atone for every sanitary sin. It is our duty to teach that hygienic salvation can only be attained through the good works of personal cleanliness. As the surgeons have given up antisepsis for asepsis, so the health officer must substitute cleanliness for disinfection. While it is by no means advisable to abandon disinfection entirely, it should not be made so important a part of public health work, and should not be insisted upon unless it is practically certain that no member of the household remains infected, and should be refused when it is probable that any member of the household is so affected.

It is apparently the prevailing opinion among hygienists that disinfection by means of formaldehyde or other germicides is a process so difficult of execution as to be beyond the ken of those to whom it is usually entrusted. In order to disinfect a room absolutely by any of these methods, it would be necessary to employ chemists especially trained to perform such duties; which, of course, is manifestly impossible, considering the large amount of this work to be done throughout the State. Hence there is evidently only one reliable method of sterilizing a room which has been occupied by a consumptive, — namely, by scrubbing, cleaning and renovating. Rooms which have been used during the dying period of the disease should have the paper removed, and then the woodwork, walls and ceiling should be thoroughly scrubbed with strong soap and water. After that the room must be left unoccupied with the windows wide open, the furniture and bed clothing also having been scrubbed, boiled or destroyed. Every household article supposed to be contaminated must be either boiled or else washed with strong soap and water, or, best of all, burned up. After a period of not less than three weeks, — and it would be still better if it were three months, — during all of which time the sun and air should be constantly allowed to course through the room, it should be repapered and repainted. When all this has been done, the apartment can be occupied with perfect safety, but not otherwise.

VI. BY AIDING THE INDIVIDUAL TO INCREASE THE VITAL RESISTANCE. — Until such time as the popular mind shall have become educated so as to realize the importance of destroying the sputum of a consumptive, it is probable that the constitutional and physical condition of the individual will be the principal factor in determining whether the tubercle bacillus will enter the system or not. It is more than probable that all persons have harbored, or will harbor, this germ, as well as many other disease-producing microbes, somewhere in the body during life; but whether it actually enters the system far enough to produce an irritation, and thus set up a morbid process, depends upon the condition of the person at the time of implantation. Therefore, nothing is more important than that those who come in close contact

with a consumptive should be watched carefully, and their mode of life so directed that they shall remain healthy. If the weight of such a person continues up to the average when compared to the height, if the blood contains a normal amount of hæmoglobin, and if the chest shows no signs of disease, there is no need of being afraid simply because one is exposed to a danger of which he is cognizant. It is likely that everybody is brought very frequently into contact with unknown dangers of a similar nature, which one would fear even more if it were possible to recognize them. Consumptomania is a condition of the mind now frequently seen among the friends of a dying patient, but among intelligent persons there is no excuse for it.

Hence, besides trying to destroy the tubercle bacillus, another important way to hinder the spread of the malady is to aid the individual to increase the vital resistance. Here, again, the State must bear its portion of the burden by still further regulating the hours of labor; by enforcing laws as regards the labor of women and children; by providing for the inspection of schools; by requiring much more sunlight and air in tenements, factories and shops; and by various other ways of helping the less fortunate classes to continually improve conditions of living and labor. Municipalities should provide numerous small parks and playgrounds, located near or in the midst of the poorer districts; public baths should be established and maintained; and out-of-door sports should be generally encouraged. By all these methods the power to resist the disease in question can be enhanced.

Cure.

As has been said before, the attempt to cure tuberculosis by common sense methods was first undertaken within a comparatively short time. In this country it was begun by the renowned Trudeau at Saranac Lake, N. Y., in 1884, to be followed in 1891 by the younger Bowditch at Sharon, Mass.; and was first taken up as a State problem and in an extensive way, by this Commonwealth in the fall of 1898, by the establishment of a sanatorium in the town of Rutland.

I. AT HOME. — The conditions absolutely necessary for

the satisfactory adoption of modern methods of treating consumption are to be found almost everywhere, — upon the housetops of a city as well as on the sunny side of any country home. Fresh air is the most effective remedial agent. The only advantage that can rightly be ascribed to climate is that an atmosphere which is pure and invigorating, and weather that is continuously pleasant, more often tempt the patient out of doors. But persons who have sojourned in various different localities for their health have often expressed their surprise when they have returned at the many pleasant days that are found in New England, and at the beautiful foliage which envelopes this part of the United States for so many months in the year. The New England States certainly possess the best summer climate in America and the summer is the most trying time for consumptives. Hence, except for specific reasons, it is unnecessary for a person with tuberculosis to go away from home.

Out-of-door Sleeping. — During the spring and summer of 1898 a very simple experiment in out-of-door sleeping was made in the town of Hanover, in Plymouth County, a place 12 miles from the sea-coast and only 100 feet above sea level, — an experiment which was productive of such beneficial results in a case of incipient pulmonary tuberculosis as to astonish the patient, the attending physician and all others to whom this innovation in the way of treatment was described.

The patient was a young man whose family history was undeniably bad, his brother, father, grandfather, two aunts and an uncle having died of consumption.

He himself was suffering at the time from cough, wheezing and shortness of breath, and had a temperature of 100.5° . He had lost ground all the previous winter, in spite of the remedies ordinarily used in such cases, until in the spring he weighed nearly 15 pounds less than normal, and had become so weak that he could not carry in a hod of coal without extreme fatigue. In May of that year he was advised by two Boston specialists to try a change of climate; and he was so heartbroken at the thoughts of leaving home that the immediate result was a further loss of 4 or 5 pounds. The

attention of his physician was called to the fact that Dettweiler, the successor of Brehmer at Görbersdorf, Germany, was in the habit of compelling his patients to remain out in their reclining chairs until late at night, in order to obtain more fresh air. Feeling convinced that the night-time could be better spent in bed, the physician urged his patient to try sleeping out of doors. This he began to do in June, and slept with no awning or roof over his head for five consecutive months, with the exception of only nine nights, when rainy weather prevented. Within the first two weeks one could see that he was making progress in the right direction; at the end of a month his temperature was normal, his cough and wheezing had almost disappeared, and he was apparently on the road to recovery.

At Thanksgiving time, on the day before the great November storm of 1898, when he began to sleep in a room from which the windows had been removed, his weight was 144 pounds, — a gain of 22 pounds in four months. The only medicine which he took was tincture of *nux vomica*. He has continued perfectly well ever since, and now weighs 147 pounds. The photograph shows how his sleeping place was arranged so as to obtain a southwest exposure. This man has worked in a shoe factory nine hours a day without any loss of time since his treatment began. While sleeping out of doors he wore a soft felt hat and cotton night shirt, and was covered with the ordinary bed clothes. He usually went to bed at 9 P.M., because the sun awakened him early in the morning.

The physician in charge, when reporting seven patients treated in this manner during the following summer, thus summarizes the result of his experience: —

Of five cases of tuberculosis, not one has taken a single dose of any cough mixture or sedative. Almost the only medicines have been *nux vomica* and a laxative. They have all been told to retire early enough to obtain nine hours' sleep.

Two other patients who tried this method of obtaining an abundance of fresh air were neurasthenics, with splashing, dilated stomachs; one of them had been condemned to die of tuberculosis, and had been compelled to give up his work; the other has worked



ORIGINAL SLEEPING BALCONY IN HANOVER, MASS. USED SINCE JUNE, 1898.

constantly in the factory. To be sure, a restricted diet had much to do with their decided improvement, but they give the chief credit to out-door sleeping, and are very enthusiastic disciples.

One word about those cabalistic terms, "dampness" and "draughts." They are bugbears, that is all, and need not be considered for a moment. Many times these patients have found their bed coverings and night clothes wet with dew, and once in a while a summer's rain has disturbed their healthful slumbers, but with no harm, beyond the necessity of drying the bed clothes before another bed time.

I am quite ready to believe that, if people could be taught to fear impure air and overheated rooms as they now dread a slight increase of moisture or a little air stirring, tuberculosis would become nearly as infrequent as small-pox.

The recent experience of a chemist in the employment of the State Board of Health is very interesting, as one of many illustrations of what can be accomplished at home by an intelligent person. This gentleman is forty-three years of age, his height is 5 feet 8½ inches, and his normal weight for years has been 118 to 120 pounds.

In spite of the low weight, his health had always been excellent until the spring of 1906, when a slight cough was contracted, which increased during the early summer. By July the patient's condition was miserable, the cough was very bad, little appetite and marked loss of strength. He took a regular two weeks' vacation, from July 7 to 23, and went to the White Mountains, where conditions were always hitherto favorable for recuperation. His weight on July 7 was 111 pounds; and, in the hopes of increasing the appetite and strength, the patient took considerable exercise, climbing Mounts Kearsarge, Hurricane, Chocorua, etc.; but the appetite which he hoped for did not come, and at the end of the two weeks the patient weighed 109 pounds. Returning, he resumed work until the second day of August, when he was examined by a physician, who pronounced that the tip of one lung was decidedly affected. About that time an examination of his sputum showed the presence of tubercle bacilli. At the same time the temperature was running in the afternoon well up to 100°. The patient was examined

by a specialist, who confirmed the diagnosis of the local physician.

Realizing the value of fresh air treatment, he at once had constructed an out-door bedroom, which was built in the south corner between the ell and the main portion of his house, covered at the top and open at both sides. The dimensions of this little room were approximately 6 by 10 feet; it was firmly secured along two sides of the house, and supported at the outer corner by a stout timber from the ground. For the height of about $2\frac{1}{2}$ feet from the floor there was a sheathed wall, the rest being open to the roof, which had a wide overhang, to prevent as far as possible the dripping in of the rain. Curtains of canvas were provided, which pulled up from beneath, but which were used only in case of storms or wind. The window was cut down into a door to provide easy access from the house. This room was simply constructed, the outer wall being of pine sheathing with a tight double floor, a natural wood finish interior, with no attempt to cover the rough beams, the roof being covered with heavy roof paper known as rubberoid. The total expense for construction and painting was about \$104.

The location of the room was such as to be thoroughly protected from the north and west winds, and the situation of the house was quite favorable, in that it was surrounded by open areas with numerous trees. The physicians were of the opinion that the patient, with the above-described quarters and with the proper care, would be as well situated at home as in a sanatorium. In fact, the patient at once took measures to inform himself of the most approved methods adopted in sanatoria, and succeeded in obtaining a copy of some very valuable rules in force for the patients at the Adirondack Cottage Sanatorium. These were published in full in the "Journal of Out-door Life" at Trudeau, Saranac Lake, N. Y., covering about four pages of the magazine, and giving essential directions as to exercise, rest, clothing, bathing, bed and sleeping rooms, food and eating, expectoration, care of the voice and other matters of importance, — rules which, if carefully followed, should result in the cure of many tuber-

BALCONY DESIGNED AND USED BY CHEMIST MENTIONED IN RECORD



culous patients if taken at the start. Some of the best of these rules especially observed by the patient are the following:—

Exercise never to the point of fatigue. Always stop before you are tired, and do not walk “on your nerves.”

None if your temperature of the afternoon before was over 99.5° .

None if uncomfortably short of breath, or if the pulse is keeping over 100.

None if the sputum is pink.

No hill climbing without special orders.

If your morning temperature is 99° , do not walk that day.

Rest in a reclining chair if your temperature is over 99.5° .

Stay recumbent on a cot out doors if your temperature is over 100.5° .

Go to bed in a room with the windows wide open if your temperature is over 101.5° , and let the doctor know at once.

When possible, it is a good thing to sleep out doors from May until November. In special cases it can be practised all the year, but with two or more windows to your room it is not essential, even in summer.

These and rules regarding diet, care of the sputum and other ordinary directions were carefully observed, the patient being in the open air practically all the time, with the exception of meals. During August and September he did almost nothing in the way of exercise, indulging, however, in occasional light reading. During this time, and indeed afterwards, temperatures never exceeded 99.4° , and were for the most part well within the normal limit.

While the value of milk and raw eggs is distinctly appreciated, on account of the patient's aversion to the latter, eggs proved to be a very small factor in his diet, but milk was taken in considerable quantity, and formed an important feature of his treatment. Six glasses were taken each day: three of them at meals, one before rising in the morning, one between dinner and supper and one before retiring at night.

From the beginning of the treatment with fresh air and milk, the patient's condition at once began to improve. On the 20th of August he weighed 112 pounds; on the fourth of September, 115 pounds; and the gain in weight was steady,

reaching on December 6 126 pounds, which was more than the patient ever weighed before in his life. During October he began to take exercise gradually, until in November he felt physically able to do any kind of work out doors. In fact, during November and December, with the consent of his physician, and largely as an incentive to keep him out of doors in the cold, he built a stable of some size on his grounds, doing most of the work, including lifting of beams, etc., himself.

From October on, there was a marked decrease in his cough and in the amount of expectoration. The examination of his sputum on the 13th of November for tubercle bacilli was negative, although one taken a week later was very slightly positive. The examination by the specialist about this time showed that the top of the lung had nearly but not quite healed.

On the first of January, 1907, after an absence of five months, the patient resumed his work in the chemical laboratory, weighing more than ever (126 pounds), and feeling as well, if not better, than before he was taken sick. He still continues his out-door sleeping, and proposes to do so even in winter. In fact, after his experience with out-door sleeping, to spend a night in-doors would be distinctly distasteful.

During the period of his treatment the patient took practically no medicine, and attributes his phenomenal improvement in the short time, entirely to the fresh air and milk and other nutritious food, and to the careful adherence to the rules regarding exercise and rest, especially in the early stages of the disease. As a matter of fact, comparatively little medical treatment was necessary except of a supervisory character, all of which shows that any intelligent person with the proper care can most successfully be treated at home.

Arrangements for sleeping out of doors can be made upon an ordinary piazza, or by erecting a platform beside a second-story window, as shown in the illustrations; or a tent can be used either on the ground or better still on the top of a flat roof. These balconies can be built at the low cost of \$10, or they can be erected in a more costly way so as to be no disfigurement to a building. Shacks are now so frequently



SHACK USED FOR TREATMENT OF TUBERCULOSIS, DESCRIBED IN REPORT.

used both in sanatoria and when applying the treatment at home, that a description of what is considered ideal in this respect will not be out of place. By indefinitely multiplying the units of which the shack room described below is one, a large shack or ward can be constructed so as to give a maximum amount of sun and air at a minimum cost.

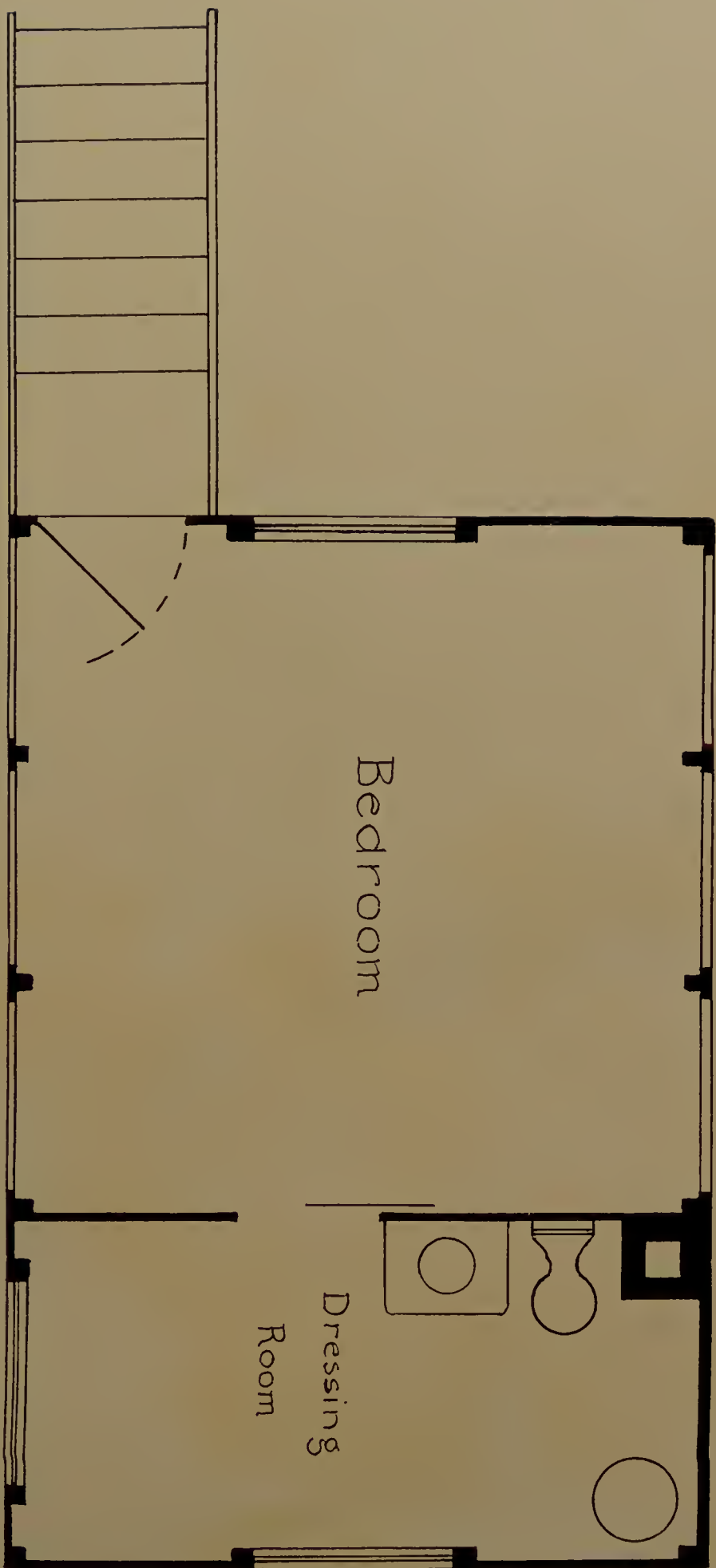
The Shack. — Theoretically, the shack, properly designed, is the ideal construction for housing tuberculous patients. In it the sufferer is constantly surrounded by the purest air, without a chance of contamination or stagnation, and he and everything about him is exposed all day and every day to the curative and vivifying influence of the sunshine. In a large establishment the extra cost of attendance upon patients in separate shacks may be a serious item, but even in such establishments some shacks are needed for patients whose symptoms require the conditions which can be provided only in them; and for that large and rapidly increasing class of cases where intelligent persons, under proper advice, undertake their own cure, they are infinitely preferable to the tents commonly used.

The shack for tuberculous patients must have all the air and sun which can possibly be admitted to it, consistently with shelter from rain, snow and violent winds. For this purpose it should face the south; the front should be as open as possible, and should be much higher than the back, so that the sun's rays may reach all parts of the interior; and there should be openings on all the other sides, to give cross-currents of air, although all the openings except those towards the south should have provision for closing them in cold or stormy weather. Even the south openings should have screens of some sort, for protection against southerly rains, but they will not often need to be brought into use. If the shack is near a dwelling-house or administration building which the patient can easily reach, nothing more than a simple structure, 12 feet square, with four walls, a floor and roof, standing on posts, and costing about \$100 complete, will be required; but for greater comfort, especially for patients unable to walk far, a dressing room, which will double the cost, may be added, as shown in the accompanying plan and photo-

graph of one of the latest shacks attached to the Millet Sanatorium at East Bridgewater. This building is 12 by 18 feet, supported on cedar posts, boarded and covered with shingles, with a shingled roof. It faces due south, and the roof rises toward the front at an angle with the horizon of $26\frac{1}{2}$ degrees, known to builders as "quarter pitch." The interior is divided into a bedroom 12 by 12 feet, and a dressing room 6 by 12 feet. The front of the bedroom is entirely open. Sashes can be fitted into the spaces between the posts if necessary, but experience shows that they are not required, light screens, covered with paraffined cloth, being found sufficient to exclude rain and snow. These screens are hinged to the top of the openings, and are drawn up to the under side of the roof when not in use. The north wall of the bedroom is about $6\frac{1}{2}$ feet high, and has three openings, closed in bad weather by hinged wooden shutters. Toward the west is the door from the outside and a window, and on the east is the sliding door leading into the dressing room, which has a window opposite the door and also a south window. In the dressing room is a chimney and a stove, a set wash-basin with running water, and a water-closet, together with movable bureau and wardrobe. In pleasant weather the windows and door of the dressing room are kept open; in cold weather they are closed so that the water pipes may not freeze; but the bedroom openings are practically never closed. Except the chimney, the whole construction is of wood. There is no plastering, the partitions being of wood sheathing. The floor is double, the upper floor being a narrow rift North Carolina pine. The cost of this structure, which is one of two exactly alike, was \$300, including the chimney, stove and plumbing.

To one who has not been long familiar with the treatment of tuberculosis in shacks of this kind, the comfort and pleasure which the patients find in them is almost incredible. Even with the thermometer at zero Fahrenheit, or below, they do not wish to close the openings; and it is found that they gain more rapidly in the keen winter air than in milder weather.

At the last visit of the writer to the shack shown in the photograph, on a snowy day in January, the patient, a young



FLOOR PLAN OF SHACK.



and delicate woman, lying in bed with every aperture in the north and south walls of the room open to its fullest extent, was talking with cheerful animation to the nurse; and it was impossible not to be touched by the appropriateness of the inscription painted on a little board over the door, "Hoffnungsruhe," that is, "Rest and Hope."

Treatment of the disease when in the incipient stage can often be as advantageously carried on at home as in a sanatorium; and, if the patient recovers at his own residence, he can more easily continue the same mode of life, because all the members of the family will necessarily have adopted a similar way of living. But if the case is at all advanced or the patient difficult to manage, it is generally advisable to remove him to a sanatorium, at least for a time; because at home it is very difficult to eliminate all things which may influence the daily conduct of the patient, who must be constantly watched and guided in a manner which only doctors and nurses especially trained in the work can be expected to know.

Whatever the arrangement, the one thing desirable is that the patient should remain in the open air as many hours as possible during the twenty-four. Many persons find no difficulty in staying out from eighteen to twenty-one hours each day.

Out-of-door sleeping may be begun without harm, even in the middle of winter.

Rest and Exercise. — Next in importance to out-of-door sleeping is regulation of rest and exercise. This must be done for the patient either by the attending physician or a nurse who has been trained especially in this line of work; and even then she should be guided by the physician in charge of the case.

The first thing to decide is: Shall the patient be wholly confined to the bed, or shall he be allowed to be up part of the time? The answer to this question is furnished chiefly by the height of the patient's temperature; but sometimes, when this is normal, the pulse rate, the condition of the digestion and the amount of emaciation must also be taken into consideration. It is an inviolable rule to keep a patient

in bed if his temperature exceeds 99.5° at any time during the day; and it is advisable to take the temperature every two hours for the first week, or long enough to ascertain with certainty whether he has any rise or not. If there is any doubt as to the advisability of a patient's remaining in bed, it is absolutely necessary for him to stay there.

A sub-normal temperature is of no importance, unless it should be so low in the morning as to indicate a reaction from a much higher rise on the previous evening.

No exercise should be permitted if there is any rise of temperature. If 99° is exceeded at any time of the day, the patient should wholly refrain from walking. There should be no exception to this rule except in a very few cases where disturbance of the digestion seems to depend upon want of exercise, and even then the effect should be very carefully watched. Exercise should never begin until one week has elapsed without 99° having been exceeded; but after the subsidence of the rise in temperature there is no better way to strengthen a weak heart than by carefully regulated walks.

A patient must never be carelessly controlled as long as his pulse remains too rapid, even if the condition of the lungs and temperature are in every way satisfactory.

The gain in weight made during rest and with a liberal diet is due principally to an increase of fat, and the final effort should be directed towards transforming this soft flesh into hard muscle by properly regulated exercise. This must be begun with caution, its extent very carefully regulated and its effect as carefully watched. When the temperature is very unstable, or the patient extremely weak, he should walk for only five minutes at a time, and but once a day. With some patients, however, a gentle walk of twenty minutes on the level can be allowed. The gait should be so slow as not to induce either shortness of breath or fatigue. If no unfavorable result is seen at the end of the week, the amount of exercise may be increased; and so on, week by week, until toward the end of a "cure" the patient walks several miles a day. Among poor patients and during the latter part of their treatment, exercise may take the form of work.

There is great danger in too much exercise, or in exercise begun too early.

Proper Food. — The question of the proper food for a consumptive is not always easily determined, and here again he will often need the aid of a physician. The indiscriminate forced feeding which was formerly advocated has now been superseded by more intelligent methods. Overfeeding is certainly apt to injure the stomach and heart, and a too rapid increase of weight may actually impair the general health and retard the reparative changes in the lungs.

The object of feeding a tuberculous patient is to bring the nutrition up to the highest standard consistent with perfect health. The view now generally held is that an increase in weight can usually be satisfactorily obtained by a moderate increase of the amount of food eaten; but, on the other hand, the patient's appetite and inclinations must not alone regulate the quantity taken. A small addition to what may be called a healthy man's diet has generally a decided effect in cases of consumption. This addition consists in most cases of two whole eggs and from one to three glasses of milk, which are swallowed after each meal. Lunches of the same are also given between meals and at bedtime.

But in this part of the treatment, as well as in the rest and exercise, precision is the secret of success, and the physician must not be content to use general terms. If the doctor learns the exact quantity of food consumed, and if the desired increase in weight is not obtained, the diet can be changed both in character and amount, frequently with quick and perceptible benefit.

The patient's diet must be much increased, but not too quickly, or at the expense of good digestion.

Cold Baths. — Daily baths are most important, and can easily be arranged in any house. Where there is no bath tub, an excellent way is to make the patient squat down in an ordinary wash tub partially filled with quite warm water, and then to throw quickly a pailful of cold water over the shoulders. This should be followed by a brisk rubbing with a coarse towel. The benefit to be derived from this performance depends upon its effect on the circulation through the skin, and unless a good reaction is obtained the bath should be changed, but not discontinued.

A daily cold bath is of great benefit to a consumptive.

II. BY FORMING SO-CALLED TUBERCULOSIS CLASSES. — Since July, 1905, Dr. Joseph H. Pratt of Boston has been treating consumption among the poor with remarkable success, by forming small classes of those afflicted, over which excellent supervision has been maintained by the aid of a trained nurse. He describes his method as follows: —

The reason that the results of home and dispensary treatment have been unsatisfactory is due to the lack of the careful supervision and strict discipline maintained in sanatoria. The tuberculosis dispensaries have been a most potent factor in preventing the spread of the disease and in educating the patients and the general public ; but I believe relatively few cases treated by dispensary methods have been cured. This has certainly been the experience of my colleagues and myself in the out-patient department of the Massachusetts General Hospital, where the dispensary methods, with the aid of the District Nursing Association, have been employed for many years.

The difference between our method and that of the tuberculosis dispensary is essentially this : that the tuberculosis dispensary gives a small amount of care to a large number of patients, while we give a large amount of care to a small number of patients.

For the opportunity to submit my plan to a practical test I am indebted to the Rev. Dr. Elwood Worcester and to the Emmanuel Church for financial support ; and our organization, therefore, is known as the Emmanuel Church Tuberculosis Class. We sometimes speak of it as a home sanatorium, and it bears much the same resemblance to a sanatorium that a correspondence course does to a college course. Every detail of the daily life is supervised, and strict discipline maintained.

A nurse is employed, who devotes her time to visiting the members of the class. I prefer the term "friendly visitor" to "nurse," because it describes more exactly the nature of her duties. She should be the family's wise counselor, kindly and tactful, and yet a good disciplinarian.

The class should number but a few members ; I think the limit should be 20. It should never be forgotten that it is the individual, not the disease, that needs the treatment.

We have been fortunate in having a small class, and so we have come to know our patients not simply as "this case of fibrous phthisis," and "that case of pyopneumothorax," but as "Elmer" and "Patrick."

Admission to the class has not been limited to favorable cases ; in fact, only one of the patients was in the incipient stage of the disease.

All of our patients have been poor ; none could afford even the \$4 per week charged at the State Sanatorium. Not all the members are intelligent ; several are unusually stupid. In the family of Selek P., a Russian Jew, no one can write English and his wife cannot speak English.

Before admission to the class is granted, the applicant must promise to give up all work, to live the out-of-door life and to obey all the rules of the class. The truth of Brehmer's motto, that "The most profitable work for a sick man is to get well," is impressed upon the patient.

After the decision has been made to join the class, a clinical history is taken, and a complete physical examination is made and entered on the clinical records. Once a month the lungs and sputum are examined. The patients are visited by the nurse as soon as they enter the class. Often before the decision has been made the nurse is sent to discuss the question with the invalid and his family, and to determine whether the open-air treatment can be carried out in their home. If there be no roof, balcony, piazza or yard available for the rest treatment in the open air, the family must move to a tenement that will enable the tuberculous invalid to spend the entire day and night out of doors. Our friendly visitor, Miss Strong, spent much time in seeking satisfactory tenements for our members. At the first visit the nurse examines the house and locality, obtains the social history of the case, ascertains the exact financial condition, and gives whatever instruction may be necessary to prevent the spread of the disease. The first visit usually requires two hours or more. A detailed report of this is at once given to the physician in charge. Subsequent visits by the nurse are made as required. Usually the patient is visited daily or at short intervals, until the details of the treatment are understood and followed. It has been found that often-repeated visits are necessary before some of the simplest rules can be fixed in the mind of the invalid and his friends.

On Jan. 5, 1906, the class numbered 15 members, all but one of whom were sleeping out of doors. The single exception is a patient who would have done so had his landlord not prevented his putting a tent on the roof. At the present time he sleeps with his head out of the window of his bedroom. One of our class sleeps on a balcony, the others in tents, placed either on the roof or on the ground near the house. Generally the tents have been

loaned, as few of our members could afford to buy them. An ordinary 7 by 7 foot wall tent with a fly has been found to be satisfactory. This costs only \$7.25. Except the time taken for meals, bath and exercise, the entire day is spent in the recumbent or semi-recumbent posture. A comfortable reclining chair is furnished each patient.

The prescribed diet consists chiefly of milk, bread, fruit, butter and oil. Most of our patients drink two or three quarts of milk a day. In a few instances unsalted butter has been furnished free. Cotton-seed oil has been found to be a satisfactory and inexpensive substitute for olive oil.

For the first few weeks no exercise is allowed, and later only when the temperature is normal the entire day ; then the exact amount of exercise is prescribed. The patient begins by walking five minutes in the morning and five in the afternoon. It is required that a watch be carried, and the exact duration of the walk be noted in his record book. After exercising, the temperature is taken and recorded. If rise of temperature occurs, or if the patient becomes tired, the amount of exercise is diminished ; if the patient continues to improve, the exercise is gradually increased. Some of our patients now walk several hours daily. During the summer and fall our fever-free patients enjoyed the privileges of the Parker Hill Day Sanatorium.

An important aid in maintaining our strict hygienic regimen is furnished by the individual record book. The form of record adopted is that devised by Dr. C. S. Minor of Asheville, N. C. Every detail of the day is recorded : the food eaten, including the amount of oil and milk taken ; the number of hours out of doors ; the temperature and pulse rate ; and the quantity and character of the expectoration. The patients now keep "out-of-door-life" charts. This keeping of records serves to impress upon the members the importance of attention to detail in the treatment ; it helps them to persevere in their monotonous life. We have found that it does not depress their spirits or cause introspection ; it serves rather to keep up their courage. Most of the class take great pride in their records. Of course, if a patient is doing badly and losing weight rapidly, the individual record would be omitted.

Eighteen months after the formation of the class, of the first 9 members, 6 are at work, the disease having been arrested ; 1 is better, but not yet working ; 1 is worse ; and 1 has died. Four of the 8 remained in the class until they were graduated ; not until

then were they permitted to work. No member graduates until the disease has been arrested. We have demonstrated that it is possible for a trained workman to return to his trade, even if it be in-door employment, provided he continues to sleep out of doors. One spending his days in a well-ventilated shop and his nights out of doors, is living under no worse conditions than he who works out of doors and sleeps in a close room.

The home treatment has one advantage over the sanatorium, in the fact that, if health has been regained by leading an out-of-door life at home, this can easily be continued in a modified form after recovery.

A place provided for sleeping out of doors and a reclining chair for rest in the fresh air are always available. Our graduates still sleep out of doors, or with their heads in open windows. Made up as our membership is, of widely different races and religious sects, they have a common bond in a common disease. A fine spirit of camaraderie has been developed. I have never heard them discuss their symptoms. They are almost invariably in good spirits. Our experience supports the opinion of the lady quoted by Benson in his Upton Letters, who maintained that the recumbent posture is conducive to cheerfulness. The gains in weight are announced weekly, and the member who remains out of doors the greatest number of hours during the month has his record exhibited. Health rivalry is thus encouraged. The greatest gain in weight has been forty-six pounds; this record is held by a negro. One patient was out of doors seven hundred and six hours in a month, — an average of twenty-three hours out of the twenty-four.

It should be remembered that the cases taken into the class were those to whom all other avenues of escape were closed; either they were too poor, or the case was too far advanced for them to gain admission to the State Sanatorium. Two cases justly rejected as unfavorable by the examining physicians for Rutland have recovered from the disease in our class. A State sanatorium, with its limited number of beds, should take only the most favorable cases; but such an organization as ours can admit "border line" cases, — that is, those that are neither distinctly favorable on the one hand, nor hopeless on the other. It has been Rev. Dr. Worcester's wish from the first to admit these cases.

Much difficulty was found in securing work for our graduates, but finally all obtained employment. Our first member is now the friendly visitor in the Arlington Street Church Tuberculosis Class,

which she has served faithfully and satisfactorily since its organization in April.

Many of our patients joined the Day Sanatorium at Parker Hill during the summer. The great value of this day camp is becoming more and more apparent. We have had increased assistance from the Associated Charities.

Dr. Worcester wrote a year ago in the "Parish News" that in his opinion the plan had a value far in excess of our own modest enterprise. That he was right is shown by the fact that our own work has been endorsed by the National Society for the Study and Prevention of Tuberculosis, by the State societies in New Hampshire, Maryland and Minnesota, and the New York Charity Organization Society. Special inquiries have been received from physicians and social workers, desirous of forming similar classes, in Providence, Newport, Syracuse, Philadelphia, Toledo, Chicago, St. Louis and Minneapolis. At least four classes patterned after ours have been established in Boston and vicinity.

Certainly such effective work as Dr. Pratt has here depicted ought to be widely imitated.

III. BY SEEKING OUT AND TREATING CASES OF CONSUMPTION AMONG MILL AND FACTORY OPERATIVES. — Within the last year an effort has been made by a few of the large manufacturers in Providence, R. I., to exterminate tuberculosis in their factories, by urging their employees to report at once any suspicious symptoms of lung trouble. One or two physicians especially interested have undertaken, free of charge, to examine and treat these cases; the object being, of course, to discover the disease, if possible, when in its early stage. Several of these workmen have recovered already, and have been able to return to work. Obviously the object lesson of the presence of these cases in mills and factories, and of their apparent cure when under hygienic treatment, will naturally result in a demand for better work rooms and in the education of the workman and his family upon the subject of proper food and living rooms, particularly the necessity for sun and air in their homes.

Dr. Frank T. Fulton of Providence was responsible for the beginning of this work, and his letter, describing how he started the movement, is very interesting and instructive:—

PROVIDENCE, R. I., Dec. 12, 1906.

HENRY P. WALCOTT, M.D., *Chairman of the Commission upon Consumption, State House, Boston, Mass.*

MY DEAR SIR :— The work which we have been doing in the factories in Providence had its origin last February, and came about as a result of a conference between Mr. Metcalf of the Wanskuck Mills, who is one of the Board of Trustees of the Rhode Island Hospital, and myself. The purpose of the work was to detect cases of tuberculosis in as early a stage of the disease as possible, and to demonstrate the efficiency of home treatment by the class method, as well as to help control sources of infection. After some deliberation, it was decided to post a notice in the mills, the idea being to call the attention of the operatives to the matter, and to do it in such a way that they could take no offence, as one of the criticisms against the proposition was that too much interference with this class of people might make trouble between the employer and the employee. You will find enclosed a copy of the notice as it was originally used. The matter was then brought to the attention of Mr. Sharpe of the Brown & Sharpe Company, who commented favorably upon it, and referred it at once to Mr. Viall, his secretary. The work was begun as an experiment, and was done very quietly. The physician's name was not made public, nor used in any way about the mill ; but when a case presented, the patient was given a personal letter of introduction. Mr. Metcalf and Mr. Viall have both given it their personal attention, and have taken a very active interest. The Brown & Sharpe Company criticised the original notice somewhat, and suggested certain changes, making it a much better notice, and, as you will see, indicating a certain amount of aggressiveness on their part. They also wrote a short note to the various foremen about the shops. You will also find enclosed a copy of this modified notice and of the letter to the overseers. It may be said here, by way of parenthesis, that the Brown & Sharpe Company employ about 4,200 men and boys, and the Wanskuck Mills about 1,000 ; some women, however, are employed in the latter place. A few of the operatives applied for medical advice ; but, in spite of the notice which had been posted, most of them waited until it was suggested to them by some one in authority about the mill. From among these 5,200 workmen there have been examined 34 persons ; 18 of these 34 have been found to have tuberculosis, making a total number of about 1 in every 290 of the employees. This does not include cases of tuberculosis which were discovered by their own family physician, and

there have been several of these of which I know. Seven of these cases have been treated in the tuberculosis class, 4 at the State Sanatorium and 1 at Pine Ridge Camp, making in all 12 who have been carefully treated. Of these 12, 7 have returned to work greatly improved, 5 of them being still under treatment. One of these 5 is an advanced case, who has shown no real improvement. Six of the 18 are accounted for as follows : 2 returned at once to their homes in Sweden ; 2 refused treatment and were sent back to work, being still under observation ; 1 of them, however, took a vacation from his work during the summer, and now has no cough or expectoration ; 2 others have disappeared.

The results, even in such a short time, must convince any one that this method of attacking the problem is of great value, for none of these cases, so far as we have been able to determine, were under the care of any physician for tuberculosis, and none of them were practising any hygienic methods. There is this to be said, however, that this method will fail unless some influential member of the establishment is willing to give his personal attention to the matter, or delegate it to some prominent official. These establishments have been very generous in aiding patients in cases where such aid has been necessary.

Yours sincerely,

FRANK T. FULTON, M.D.

A notice reading something like the following was posted in the mills and factories :—

Notice.

There is at present a strong effort being made to exterminate the disease, consumption. It is known to be very easily curable if the treatment is begun in the early stages, and readily prevented by proper ways of living ; the hopeless or incurable cases are those that have been allowed to go neglected.

In order to aid in this matter, we have provided, free of expense to our employees, a physician who is especially interested in this disease, and who can advise about the best treatment ; and, for the purpose of helping those who may be afflicted and protecting others, we shall feel free to suggest an examination of any one who may possibly have symptoms of the disease, as indicated by coughing, loss of weight or appetite. If the lungs are found to be healthy, there is then no need to worry ; if, on the other hand, there is any disease, it can be treated before it is too late.

BROWN & SHARPE MANUFACTURING COMPANY.

In a few instances in Massachusetts, aid both medical and material in character has been given employees suffering from tuberculosis. The following notice, issued by the A. L. Joslin Company, shoe manufacturers, in March, 1906, needs no explanation, and is greatly to be commended: —

OXFORD, MASS., March 1, 1906.

During the year 1905 no death from consumption is known to have occurred among the employees and their families of the factory. It is hoped that this good record will continue. To that end, your attention is called to the following facts concerning consumption, and in particular to the occurrence of consumption in Oxford.

Consumption is a contagious disease. It is transmitted almost entirely by the sputum which is coughed up. This dries, and the dried particles containing the germs then float about in the air or are deposited upon neighboring objects. If these get into the body, consumption may result. The destruction of the sputum prevents the spread of the disease, and does it so surely that in consumptive hospitals nurses almost never take it.

Consumption has caused more than 1 death out of 6 in Oxford during the last sixty years. In the last thirty-five years it has greatly decreased, and at present only one-third as many people die of it as thirty-five years ago. In the last five years the decrease was as great as in the preceding ten years, and there is a good prospect that it can be stamped out, if all realize how it spreads. There were but 4 deaths from consumption in Oxford in 1905.

There are about 600 houses in Oxford, and in over one-third of this number some one has died of consumption. As a rule, one death has been followed by another. This would not have taken place if all the sputum had been burned. If the rooms in which a person with consumption has lived are thoroughly cleaned and aired, and opened to the sunlight, there is little danger that any one will then get the disease from living in them.

Consumption spreads in families only because the members live together, and so infect one another. Living together is more important than relationship. In the sixty years, 1844–1904, 512 deaths from consumption in Oxford occurred in as many as 403 different families. It is interesting to study the course of the disease in some of these families. One of these was as follows: A mother and 3 daughters died of consumption within three years of each other, in the same house; the father then moved away, but fell a victim to the disease a year later. Compare the above family with this

typical instance of "farm-house consumption" in Oxford : A young man of twenty-one died in 1879, on a farm ; seven years later his sister died in the same house ; their mother died after another interval of eight years, also in the same house ; and a year later another of her sons ; three years later still another brother similarly succumbed, but in a different dwelling.

Consumption can be avoided. To do this, help all who have the disease to keep their houses clean, and show them how to destroy their sputum, then they will not give you the disease. Encourage every one to open their windows, let in the sunlight, and stay out of doors whenever they can.

If you have a cough, see the doctor, and have your sputum examined for germs of the disease. One examination is not enough. The State Board of Health will examine sputum for nothing.

The firm hopes that it will be notified of any case of consumption occurring among the employees or their families. If any one now in the employ of the A. L. Joslin Company has the disease, or contracts it, and secures the admission this year to the State Sanatorium at Rutland, the firm will offer to pay his or her board there for three months.

A. L. JOSLIN COMPANY.

In a few other instances, manufacturers have taken measures to find out how many of their workmen are suffering from tuberculosis, with a view of rendering them assistance, after the Rhode Island plan. This method of procedure is here prominently mentioned because of its great importance, and in the hopes that it will be extensively adopted by all those who employ large numbers of in-door workers.

IV. BY ESTABLISHING DAY CAMPS FOR TUBERCULOSIS. — The Boston Day Camp for Tuberculosis, which was opened July 1, 1905, was established by the Boston Association for the Relief and Control of Tuberculosis. This camp was modeled after somewhat similar institutions abroad. The scheme originated, as one might expect of advanced work for tuberculosis, in Berlin, in the summer of 1899, and has met with such success and appreciation that a recent report shows that there are six of these camps in Berlin alone, similar institutions in ten other cities of Germany, and one each in Vienna, London, and Mons, Belgium.

Abroad, a wooded tract of land is chosen, with easy access

from the crowded centers of population. This is enclosed by a fence, and rude buildings are erected to serve as a kitchen and dining room, and to furnish shelter in case of rain. Patients arrive early in the forenoon, after taking breakfast at home, and are provided with lunches and a midday meal prepared on the ground. The day is spent out of doors, under the guidance of a physician and nurse, and in the evening the patients return to their homes for supper and to sleep. In Germany, by the aid of the workingmen's insurance, each patient pays for his maintenance; and the institutions are enabled to be self-supporting by buying at wholesale the large quantities of milk there used, and selling it at the usual retail prices. The feature that has led to the almost incredible increase in the number of these institutions in so short a time is their cheapness and simplicity, — a camp costing at the outset only about \$1,000, and requiring little of organization.

It is the custom abroad to admit all classes of patients who need out-door rest, although in actual practice about 75 per cent. of the cases are suffering from tuberculosis. There are separate camps for men and women, and a few camps especially for children. In the latter, teachers are employed, so that as little schooling as possible is lost. The camps remain open from the first of May to the end of October. In the fall of 1904 one of the Berlin camps was equipped with somewhat more substantial buildings, and remained open throughout the following winter.

The ground secured for the Boston camp is admirably adapted to the purpose, being an old orchard on the summit of Parker Hill, 230 feet above the sea, in the Roxbury district, not more than 2 miles from the State House. Several street car lines converge at Roxbury Crossing, making it easily accessible to all parts of the metropolitan district.

From Roxbury Crossing, which is immediately at the foot of Parker Hill, the patients are carried to the camp in a park wagon seating 12 persons. The first trip up the hill starts at 8 A.M., the wagon running half-hourly until all are at the camp.

On the lawn, amply shaded by old apple trees, are strewn steamer chairs and couches, where the patients rest through-

out the day. Blankets are supplied, so that the cool days of early fall are passed in comfort. Books and games have been donated, and the women are allowed to bring their sewing. The camp, unlike those abroad, is restricted to patients suffering from pulmonary tuberculosis, and men, women and children are admitted to the one institution. There seems to be no valid reason for separating the sexes in such a camp in America. Soon after all the patients have arrived in the morning a luncheon is served, consisting of bread, butter, milk and eggs, when the latter are prescribed by the physician. At noon a warm dinner is served, consisting, in abundant variety, of meat, two vegetables, milk and a dessert. At 3.30 P.M. another luncheon is served, much like that of the morning. At either of these cocoa is offered on cool days. The average consumption of milk by each patient is one and one-half quarts per day, aside from what may be taken at home.

Patients in all stages of the disease are accepted for treatment on the recommendation of their own private physician or of any of the dispensaries, and remain under the care of such private or dispensary physician during their stay at the camp. A physician is in attendance at the camp for at least two hours daily, for general oversight. The matron is a trained nurse, and during most of the time has had a trained assistant. The patients are examined by the resident physician on entrance, and monthly thereafter, are weighed once a week, and have their temperatures taken twice daily. In most cases there has been a marked decrease in temperatures and night sweats. In all instances the patients were able to sleep and eat better, after a few days spent in the open air. A number of patients were cared for who had been accepted for treatment at the State Sanatorium, and were awaiting admission; others came who had failed of admission at Rutland because of the advanced stage of the disease or unfavorable symptoms. Several of the latter so improved under the treatment at the day camp that they were accepted at the State Sanatorium on second examination. For one woman, accepted at Rutland, but unable, for domestic reasons, to go, the day camp has served admirably as a substitute,

for the disease is now pronounced arrested, and at the close of the season she will return to her household duties.

Perhaps of equal value to the benefits accruing directly to the patient are those that come to his family and to the community at large, from the instruction he receives in measures to prevent the communication of the disease to others. The efforts of the physician and nurses are largely expended on this side of their work, and every detail of the camp life is watched with scrupulous care. Japanese paper handkerchiefs and paper bags are provided each patient for the disposal of his sputum, and are collected and burned daily. Patients are required to wash carefully before eating, and each is supplied with a clean towel each morning, which, with his own soap, he keeps in a box bearing his name. Besides the constant instruction given by those in charge, several short, simple addresses on hygiene have been given by one of the physicians from the tuberculosis clinic at the Boston Dispensary.

The entire plant and equipment, which cost about \$1,300, consists of a kitchen and pantry, with a large range and hot-water tank; water-closets for men and women, connected with the city water supply and sewer; a 20 by 50 foot dining tent, with board floor; and three 10 by 12 foot tents, one for the use of the physician, one for storage of steamer chairs, and another for the use of the night watchman. The dining tables are covered with white oilcloth, easily cleansed; and figured dishes of light stoneware give a softening touch to the somewhat rude furnishings to be expected in a camp.

The staff comprises an attending physician, who volunteers his services, a matron, a nurse, a cook, a cook's helper and a night watchman.

The camp has a capacity of 50 patients, which could be doubled at little expense by simply adding another dining tent. The cost per patient is about 50 cents per day, exclusive of the cost of the team made necessary by the elevation of the camp and its distance from the street car line. The payment expected of the patient is 25 cents per day, although no one is excluded because of inability to pay this amount; in fact, few of the patients, as has been corroborated by

investigation, are able to pay more than their car fares to and from the foot of the hill. The camp is discontinued for the season about November 1.

Such a camp is in no wise to be compared with a properly equipped sanatorium, where the life of the patient is regulated throughout the full twenty-four hours of the day; but it admirably supplements the treatment given at home by private physician or dispensary to a large class of consumptives for whom there are no sanatorium facilities.

The extraordinary cheapness of the camp as compared with the sanatorium, and the striking object lesson it offers in the educational campaign that must be waged in every community, may, as has been the experience abroad, lead to the establishment of many more such camps.

Mr. Alexander M. Wilson, secretary of the association, states that this day camp, which has been in operation for two seasons, opened in 1905 on July 6 and closed October 31, — a total of 123 days. The maximum attendance on a single day was 58 patients, and the average daily attendance was 31 patients. The total number of patient-days was 3,914. The first cost of the camp was \$1,427.30, and the cost of maintenance was \$3,240.74, making the cost per patient per day 82 cents.

In 1906 the camp opened May 23 and closed October 31, — a total of 162 days. The maximum attendance on one day was 72 patients, and the average daily attendance throughout the season was 46 patients. The total number of patient-days was 7,522. The cost of maintenance was \$4,803.22, making the cost per patient per day 63 cents. A number of patients are received who are awaiting their turn for admission to the State Sanatorium; the vast majority of patients, however, are too far advanced in the disease to be accepted at the sanatorium. The results accomplished have been gratifying, when consideration is given to the advanced stage of the disease in most of the patients. In the season recently closed the disease was arrested in 6 patients, 16 patients were sent to the State Sanatorium and 71 were improved. Individual gains in weight of 45, 27, 23 (two instances), 19, 18 (three instances), 16 and 15 pounds were recorded.

A logical extension of the day camp scheme for the treatment of this class of patients is a camp annex, run in connection with an ordinary hospital. The House of the Good Samaritan in Boston opened such an annex in the summer of 1906, and is continuing the daily care of 25 women patients during the winter. The patients sleep at home, taking supper and breakfast with their families. Luncheons and the noon meal are supplied at the hospital, where the day is spent out of doors, under the supervision of the nurses and the medical staff. For the care of 25 patients the House of the Good Samaritan finds it necessary to enlarge its ordinary staff very little, so that almost the only cost of the camp is the food eaten by the patients. The expense has been found to be about 35 cents per patient per day. The supervision of the patients through the day is supplemented by visits of a nurse to their homes in the evenings and on Sunday.

SANATORIA AND HOSPITALS.

The Commonwealth of Massachusetts has already demonstrated that it considers the tuberculosis problem as properly one which the State must try to solve. It is probable that this opinion is being forced upon the public mind because the ravages of the disease are so great and the situation so grave. The chart printed in the first part of this report shows that there has been quite a constant diminution, both in the death rate and in the actual number of deaths from consumption, since Koch discovered the tubercle bacillus in 1882. This is probably the result of the renewed interest awakened at that time, and to the knowledge of how the disease spreads, which was brought out by this discovery. Some authorities claim that there is no way to account for the diminution in the death rate from tuberculosis, and that under adverse conditions it is very likely to rise again; yet others believe the reduction will be lasting, because due to a more universal knowledge of how the disease is disseminated and how cured; also to the popularity of out-door life, which has grown upon the public during the last twenty years; and to the general improvement in the manner of living.

The chart shows, further, that a still more rapid fall began

to take place soon after the State Sanatorium was opened, and has continued with but slight variation ever since. This might be expected to have some influence, because it is inconceivable that over 1,000 patients could be treated each year in that institution without producing any appreciable effect upon the prevalence of the disease. Nevertheless, the decrease in tuberculosis has not yet become so rapid as to encourage one to believe that the situation will soon become much less serious. The conditions will remain the same until every city and large town realizes the absolute necessity of erecting small hospitals on the outskirts of each municipality, in which to place all advanced cases which cannot be treated properly at home. If one pauses long enough to think how many cases there are in the State of Massachusetts at the present time, probably 25 per cent. of which ought to be in a hospital, he will perceive that even the Commonwealth of Massachusetts cannot afford to build sufficient hospital accommodations.

Hence it is the opinion and the hope of the commission that municipal governments or public-spirited persons will erect hospitals, at any rate in the localities where the disease is the most prevalent, in order to aid the State in attempting to solve a most difficult problem, and to assist in relieving an apparently interminable situation. Attention is called to the city of Boston, which is building a hospital for such purposes; and to Fall River, where the city government has already provided such accommodations.

Meanwhile, the commission would advise the State to erect three hospitals for the treatment of tuberculosis, which should be devoted principally to the treatment of cases in the advanced stages of the disease. One of these hospitals should be located somewhere in the Connecticut valley, another in the northeastern part, and a third in the southeastern part of the State. Each of these hospitals should be built to accommodate not over 150 patients. If the Legislature should decide not to spend as large a sum as would be necessary to build these hospitals, the commission is unanimously of the opinion that it would be far more desirable to erect three small hospitals, with large enough administration buildings to allow for the addition of other wards later, rather than to construct one large hospital. Hospitals for advanced tuber-

culosis must be located reasonably near the homes of the inmates; consequently, one hospital, no matter how large, would be very unsatisfactory.

The commission was surprised to find that, although it is generally understood that the State Sanatorium at Rutland is devoted principally to incipient cases, yet less than one-third of the inmates come under this classification. The explanation given by the resident physician for this remarkable fact is, that even at the present time tuberculosis remains undiscovered until it has reached a stage when it can be easily recognized by a physician and frequently is suspected by the friends of the patient. In order to keep the beds full, it apparently has been the policy of the management of the State Sanatorium to admit some cases in quite an advanced stage of the disease, often perhaps only tentatively. Whether the case in question shall be admitted or not seems to depend as much upon the number of empty beds as upon the condition of the patient. As a result of this, persons are refused at one time who are favorable for treatment, while at other times patients much more unfavorable are allowed to enter. This method has created more or less dissatisfaction throughout the State, especially among physicians; but the medical profession cannot justly criticise this condition of affairs until it is prepared to make an early diagnosis, and to urge persons to enter the sanatorium when suspicious symptoms are first discovered. It is the opinion of the commission that any hospital supported by the State for the treatment of tuberculosis should at all times reserve a small number of beds, in order to be able immediately to admit any particularly favorable and deserving case, if the institution is one devoted principally to incipient cases; or so that a needy and extremely ill person can enter at once, if the hospital is used principally for patients in the latter stages of the disease.

Another thing that will be noticed is, that 35 per cent. of the cases at Rutland are residents of Boston. Of course, while no one is to blame for this apparent discrepancy, yet it is certainly an injustice to the citizens of the rest of the State that a community having one-fifth of the population should receive one-third the aid given to consumptives by the Commonwealth.

This should be corrected by allotting a certain number of beds in the hospitals or sanatoria to each county, or to a district arbitrarily created; and whenever a patient leaves, the district which has been the longest without an opportunity to make use of a bed in a State institution should be offered the first chance to do so. The manner of establishing a quota for each district can be easily determined by consulting the vital statistics, or the tables showing the number of cases by counties, printed in this report.

On account of its large size and inaccessibility, the State Sanatorium at Rutland might well be reserved for persons having the incipient form of the disease. In connection with each hospital for the treatment of tuberculosis a dispensary should be established, in order to offer patients boarding in the town where the hospital is located, who cannot afford to pay for medical attendance, the care of physicians trained in this work. If special dispensaries are established, it is essential that suitable means are taken by the management to see that those only are treated who cannot afford to pay for their treatment. Nearly a year ago a free dispensary was opened at the Rutland Sanatorium, but for some inexplicable reason it has not been patronized to any great extent. It is quite probable that not a few of the persons who are boarding in or near the town of Rutland are really in such straitened circumstances as hardly to be able to pay a physician; and the State Dispensary ought to be brought to their attention, and made available by the employment of a visiting nurse.

If hospitals for the treatment of advanced tuberculosis should be erected, it is advisable that the trustees of these and of the State Sanatorium at Rutland designate certain of their members to act as an advisory board for all these institutions, so that there may be some uniformity in the management, and a frequent interchange of views and experience.

STATE MEDICAL INSPECTORS.

Next in importance to compulsory notification and registration, — which it is hoped the Legislature will immediately require by law, — and far more important in the real warfare against disease than the building of hospitals, is the creating

of State medical inspectors, to assist both the medical profession and the laity in fighting consumption. A law should be enacted, arbitrarily dividing the State, for purposes of medical inspection, into twelve or more districts, and providing for the appointment of a physician of considerable learning and experience, a resident of the district, as State medical inspector. It should be his duty to inform himself as to the prevalence of tuberculosis in the district; to devise ways and means of combating the disease; to disseminate knowledge as to the best methods of preventing its propagation; to make or cause to be made microscopical examinations of sputum, free of expense; to examine all persons in said district desiring to enter the State Sanatorium at Rutland, or other tuberculosis hospitals which the State may erect; to keep a record of the dwelling place, occupation and physical condition of all persons in said district who have been inmates of such hospitals; from time to time to forward to each hospital for consumptives a report of the condition of the persons who have been treated in said hospital; and also to perform such other duties as may be imposed upon him by the State Board of Health.

These inspectors might be able to enlist the aid of philanthropic persons in establishing tuberculosis classes or day camps, such as have been mentioned. They should be able at least to interest employers within their districts so as to prevent any employee suffering with tuberculosis from imperilling the lives of his fellow workmen by spitting carelessly. It is believed that, if the attention of all the manufacturers is brought to the way in which the prevention and cure of tuberculosis among operatives is being carried out in Rhode Island and in a few places in this State, many others will be quite as ready to help those in their employ who are sufferers from the disease.

The State medical inspectors, in performing their various duties, will need the assistance of visiting nurses, — a work which young women not otherwise occupied will perhaps volunteer to do without expense to the State; but, if volunteer nurses are not forthcoming, then the State should employ women of some experience, under the direction of the inspec-

tors, to visit needy patients who for any reason cannot be admitted to a State hospital. Such work ought to be given to those who have recovered from the disease, because they will better understand the essential elements of the treatment.

These inspectors should keep in touch with the State institutions by frequent consultation with the trustees or superintendents. They should be responsible, however, to the State Board of Health, and should make annual reports to that Board, or more frequent reports if called upon; and, if the office force of that department or its appropriation are insufficient to provide for their supervision, further legislation should be enacted, in order to cover this additional expense.

The commission is strongly of the opinion that by means of State medical inspectors great good can be accomplished in the fight against tuberculosis.

SUMMARY.

The commission reports: —

1. As to the number of persons in the Commonwealth who are suffering from pulmonary tuberculosis, or consumption: —

That the total number of cases of pulmonary tuberculosis reported to the commission is 7,779; of these, 6,376 are private patients of physicians who answered the circular letter sent out by the commission, and 1,403 are in either private or public institutions located in the State. The number of incipient cases reported is 2,792; the number of advanced, 2,339; far advanced, 2,648; total advanced, 4,987.

2. As to appropriate and available sites for a hospital or hospitals for the treatment of such sufferers: —

That many appropriate and available sites, such as have been described in the text, can easily be found in every county and in the neighborhood of nearly every municipality in the State.

3. As to the probable cost to the Commonwealth of erecting and maintaining hospitals adequate for such treatment: —

That the probable cost of erecting such hospitals would be about \$500 per bed; and of maintenance, from \$7 to \$9 per week per patient.

4. As to the advisability of the undertaking by the Commonwealth of the care and treatment of such sufferers, the commission advises:—

That the statutes relating to the public health be amended by inserting the word “tuberculosis” after the word “scarlet fever,” in sections 49, 50 and 52, chapter 75, Revised Laws; and also by inserting the word “tuberculosis” after the word “smallpox” and after the word “diphtheria,” in sections 1 and 2, chapter 213, Acts of 1902.

That section 1, chapter 165, Acts of 1906, relating to the prohibition of expectoration in certain public places, be amended by inserting the words, “in any mill or factory, or in any hall of any tenement building occupied by five or more families, or in any school building,” after the words “or music hall.”

That the State erect three hospitals for the treatment of tuberculosis, to be devoted principally to the treatment of cases in the advanced stages of the disease; one of these hospitals to be located somewhere in the Connecticut valley, another in the northeastern part and a third in the southeastern part of the State; each of the hospitals to be built to accommodate not over 150 patients.

That proper legislation be enacted so as to provide for State medical inspectors.

HENRY P. WALCOTT, M.D., *Chairman.*

CHARLES H. ADAMS.

JEFFREY R. BRACKETT.

CHARLES H. PORTER.

ADAM S. MAC KNIGHT, M.D.

CHARLES S. MILLET, M.D.,

Secretary.

APPENDIX.

DIRECTORY OF INSTITUTIONS FOR THE TREATMENT OF TUBERCULOSIS, IN BOSTON AND VICINITY.

[Compiled by the Boston Association for the Relief and Control of Tuberculosis.]

STATE INSTITUTIONS.

Massachusetts State Board of Health, State House, Boston. — Makes free sputum examination for all physicians in the State.

State Sanatorium, Rutland, Mass. (50 miles west of Boston). — For residents of Massachusetts in the early stages of tuberculosis of the lungs. Opened October, 1898 ; 375 beds ; cost to patient, \$4 a week, remainder of expense borne by the State. Conducts free out-patient department for patients boarding in town of Rutland.

Examinations of applicants for admission are made according to the following schedule : —

At the sanatorium any day except Sunday.

At the Boston office of the sanatorium, which is located at the new out-patient department of the Massachusetts General Hospital, Wednesdays and Saturdays, from 1.30 to 3 o'clock P.M.

At Worcester City Hospital Wednesdays and Saturdays, from 9 to 10 A.M. At Worcester Hahnemann Hospital Thursdays, 4 to 5 P.M.

At Northampton by Drs. E. H. Copeland and J. C. Hanson.

At Springfield by Dr. Everett A. Bates, 57 Chestnut Street, Wednesdays and Saturdays, at 2 P.M.

At Pittsfield by Dr. R. A. Woodruff, 114 Wendell Avenue, Wednesdays and Saturdays, at 2 P.M.

At Greenfield by Dr. Chas. T. Canedy.

At Fall River by Dr. A. S. Mac Knight, 355 North Main Street, Wednesdays and Saturdays, at 2 P.M.

At Lowell by Dr. Boyden H. Pillsbury, 58 Kirk Street, Wednesdays and Saturdays, at 2 P.M.

(Any patient entering the sanatorium has the right to have homeopathic treatment if he so desires. It is understood, however, that

patients examined at Boston on Saturdays, at the Worcester Hahnemann Hospital, at the Dickenson Hospital, Northampton, by Dr. Copeland, and by the resident homeopathic physician at the sanatorium, shall be under the homeopathic service. All other patients are treated by physicians of the regular school.)

The sanatorium station is Muschopauge, on the Central Massachusetts Railroad. Leave North Union Station, track 17, Boston, at 1.40 P.M. The sanatorium carriage meets this train at Muschopauge. Other trains leave Boston at 8 A.M., 3.55 P.M. and 5.41 P.M. Returning, leave Muschopauge at 7.56 A.M., 9.15 A.M., 2.19 P.M. and 4.51 P.M. Fare one way, \$1.

State Hospital, Tewksbury. (Apply at 28 Court Square, Boston.) — For men and women. Separate building for male patients suffering from tuberculosis, with 100 beds. Two shacks for outdoor sleeping. Separate building for women under construction.

Danvers Insane Hospital, Danvers, Mass. — Separate cottages of special design for treatment of consumptives.

State Reformatory, Concord, Mass. — Separate ward for tuberculosis cases.

Sanatorium for Consumptive Prisoners, Rutland, Mass. — The General Court of 1905 appropriated \$25,000 for the purpose of providing for consumptive prisoners. Institution will probably open in 1907.

BOSTON CITY INSTITUTIONS.

Boston Board of Health, Old Court House, Court Square. — *a.* Provides free examination of sputum. *b.* Requires physicians to report cases of pulmonary and laryngeal tuberculosis, as other contagious diseases. These cases are visited by inspectors from the Board of Health, to see that sanitary precautions are observed. *c.* Patients who are clearly dangerous to their families or to the community are sent to hospitals. *d.* On the death or removal of a patient, the rooms are disinfected.

Long Island Hospital and Almshouse, Long Island, Boston Harbor. (Apply at 28 Court Square.) — For men and women. Separate building, with 60 beds, for male patients suffering from tuberculosis.

Boston Overseers of the Poor, 43 Hawkins Street. — Provide sputum cups for those under their charge who have tuberculosis.

Penal Institution, Deer Island. — Separate provision for treatment of tuberculosis.

Consumptives' Hospital. — An ordinance creating a consumptives' hospital department has been passed; trustees have been

appointed, who assume their duties May 1, 1906 ; \$150,000 is immediately available for land and buildings. Pending the erection of a hospital, 30 patients are being boarded in private hospitals.

PRIVATE INSTITUTIONS.

Sharon Sanatorium, Sharon, Mass. — For treatment of women of limited means, in the first stages of consumption. Number of beds, 21. Cost to the patient, \$5 per week, exclusive of washing. Application should be made to the superintendent.

Millet Sanatorium, East Bridgewater, Mass. — For treatment of tuberculosis in both sexes. Prices are moderate, and a reduction is made in certain cases. Application should be made to the resident physician.

House of the Good Samaritan, Francis and Binney Streets, Roxbury. — A free hospital for women and children. Sixteen beds for consumptives. Conducts a camp for the daily treatment of 20 to 25 patients.

Carney Hospital, South Boston. — Beds for 10 consumptives.

Free Home for Poor Consumptives, 438 Quincy Street. — Number of beds, 27. Has in addition a large new building ready for occupancy.

Channing Home, 30 McLean Street. — Free home for women suffering from chronic and incurable diseases. Number of beds for consumptives, 16.

Cullis Consumptives' Home, Blue Hill Avenue, Dorchester. — For care of needy consumptives in the last stages of the disease. Forty beds.

Holy Ghost Hospital, 1575 Cambridge Street, Cambridge. — Provides for about 30 consumptives.

St. Monica's Home for Colored Women and Children, 125 Highland Street, Roxbury (the old William Lloyd Garrison House). — Ward for 6 consumptives.

Day Sanatorium for Consumptives, 125 Parker Hill Avenue, Roxbury. (Apply at 4 Joy Street.) — For the daily treatment of 50 patients through the summer months. Conducted by the Boston Association for the Relief and Control of Tuberculosis.

Convalescent Home of Children's Hospital, Wellesley, Mass. — Out-door shacks for children with non-pulmonary tuberculosis.

Rutland Cottages, Rutland, Mass. — For treatment of tuberculosis. Prices moderate. Number of beds, 80. Six buildings and laboratory. Six beds at \$6.00 per week. Applications should be made to the resident physician.

DISPENSARIES.

Boston Dispensary, Corner Ash and Bennet Streets. — Separate clinic for treatment of tuberculosis. Hours, 9 to 11 A.M., daily, except Sundays and holidays.

Out-patient Departments. — Massachusetts General Hospital (hours, 9 to 10 A.M.), Boston City Hospital, Carney Hospital, and other hospitals and dispensaries. Hours, 9 to 11 A.M., daily, except Sundays and holidays.

Berkeley Infirmary, Corner Warren Avenue and Berkeley Street. — Hours, week days 9.30 to 11 A.M., Sundays 4.30 to 5.30 P.M.

Trinity Dispensary (for women and children), 38 Chambers Street. — Hours, 6 to 8.30 P.M., on Monday, Tuesday, Thursday and Friday.

Tuberculosis Classes "for the home treatment by sanatorium methods" of incipient and moderately advanced cases have been formed as follows : —

Emmanuel Church Tuberculosis Class. — Meets at the out-patient department of the Massachusetts General Hospital Friday mornings. Application should be made to Dr. Joseph H. Pratt, 143 Newbury Street.

Arlington Street Church Tuberculosis Class. — Meets Wednesdays at 3.30 P.M., in the House of the Good Samaritan. Application should be made to Dr. N. K. Wood, 259 Beacon Street.

Suburban Tuberculosis Classes. — Meet Monday and Thursday mornings, at the out-patient department of the Massachusetts General Hospital. Applications should be made to the department of social service, at the out-patient department of the Massachusetts General Hospital, or to Dr. John B. Hawes, 2d, 295 Beacon Street.

Cambridge Tuberculosis Class. — Meets Thursdays, at 3 P.M., at the rooms of the Cambridge Anti-Tuberculosis Association, 689 Massachusetts Avenue, Cambridge.

SOCIETIES.

Instructive District Nursing Association, 561 Massachusetts Avenue. — Visits repeatedly and instructs all consumptives applying at the Boston Dispensary, Massachusetts General and City Hospitals, and those coming to the notice of the district physicians.

American Invalid Aid Society, 707 Tremont Building. — Furnishes invalids, especially consumptives capable of recovery, information as to climate, homes and transportation ; assists through its correspondents in procuring work, etc., and as funds allow makes

loans without interest when necessary, to enable invalids to regain health. Owns lands in different sections of the country in health regions.

The Hebrew Benevolent Society, 43 Hawkins Street. — Has a committee on the prevention of tuberculosis, and gives special consideration to those suffering from this disease.

The *Boston Provident Association*, the *Associated Charities*, the *Society of St. Vincent de Paul* and many other charitable and benevolent societies are doing special work for consumptives.

Boston Association for the Relief and Control of Tuberculosis, 8 Beacon Street, Room 55, Telephone Hay., 1439-4. — Objects: "to promote a careful study of conditions regarding tuberculosis in Boston; to educate public opinion as to the causes and prevention of tuberculosis; and to arouse general interest in securing adequate provision for the proper care of tuberculous patients in their homes and by means of hospitals and sanatoria." Publishes and distributes leaflets of instruction. Gives lectures and exhibits. Maintains a nurse to visit and instruct patients in their homes, and to assist in securing their admission to hospitals or sanatoria. Supplies free or at cost destructible sputum cups, paper bags and paper handkerchiefs.

Cambridge Anti-Tuberculosis Association, 689 Massachusetts Avenue, Cambridge. — Carries on educational and relief work. Conducts free tuberculosis dispensary; hours, Mondays, 10 to 11 A.M.; Thursdays, 7.30 to 9.30 P.M. (See Tuberculosis Classes, under the heading Dispensaries, p. 77.)



